Installation Guide

Agilent Technologies 16700B-Series Logic Analysis Systems

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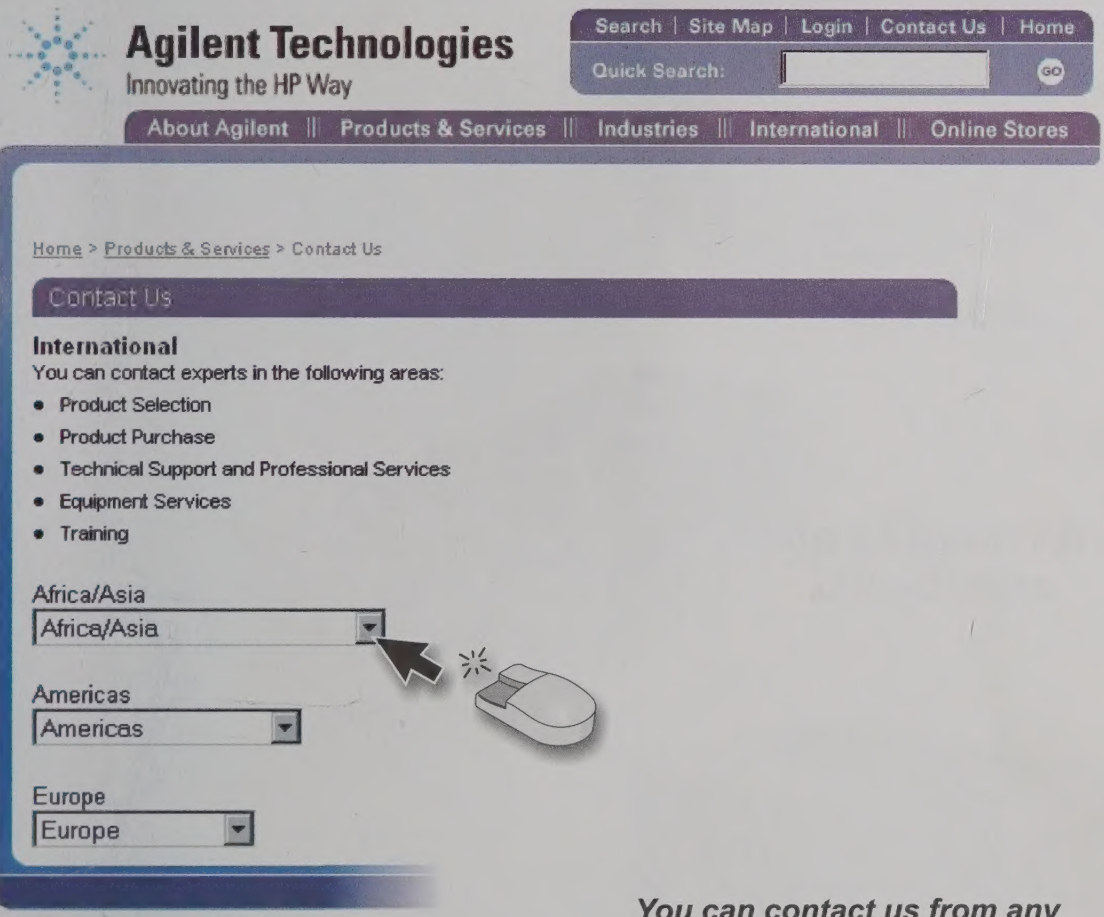

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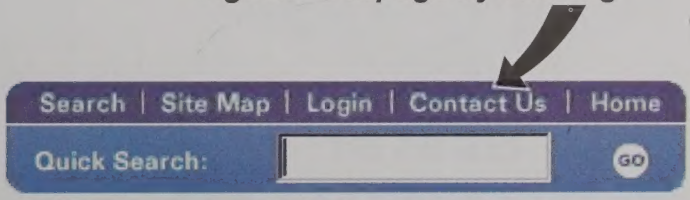
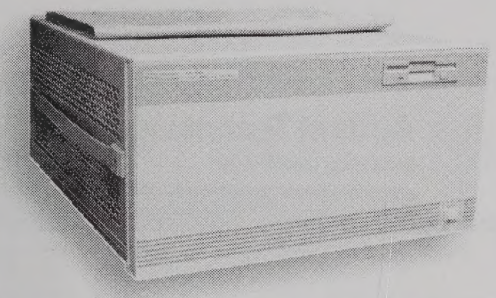
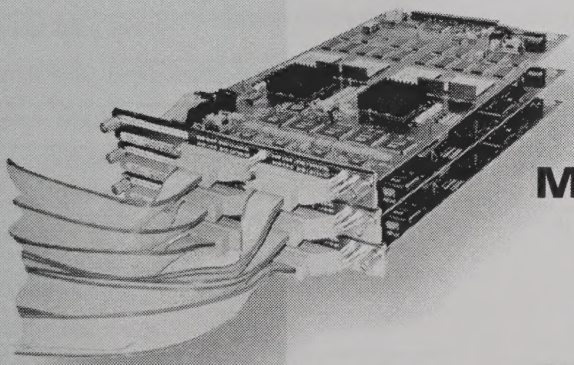


16700-92011

Installation Guide



16700B



Measurement Modules

16702B

Logic Analysis Systems

16allp01 Publication Number 16700-97018

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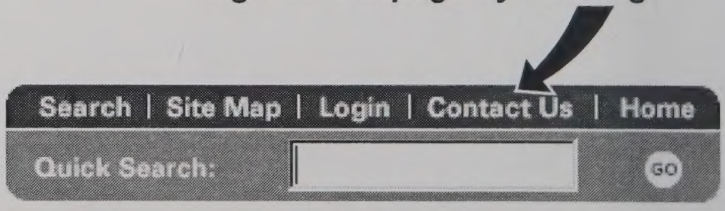

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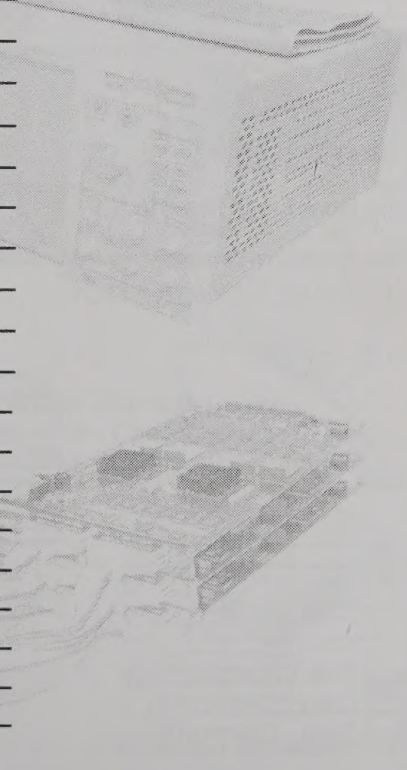
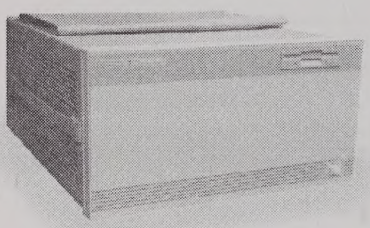
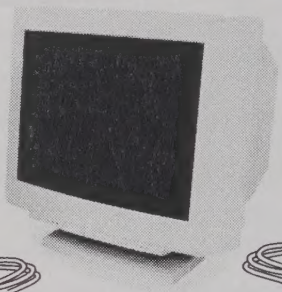
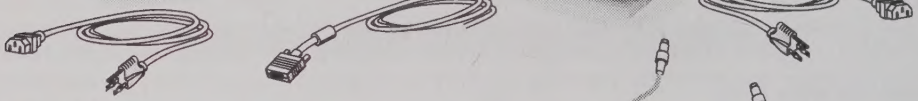


16700B Mainframe

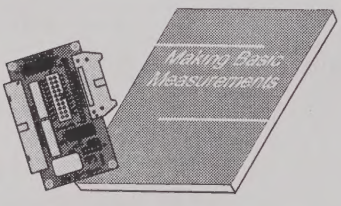




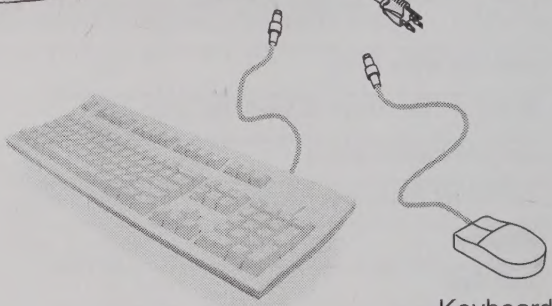
(If ordered)
Monitor
Monitor Cable
Monitor Power Cable



Power Cable

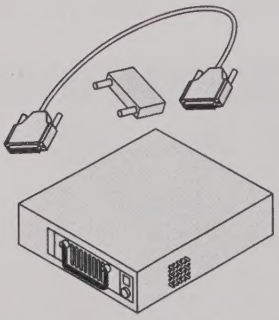


Training Board and Training Kit

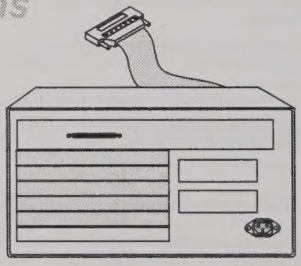


Keyboard
and
Mouse

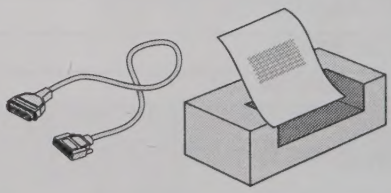
Additional Connections



External Disk Drive and Cable
(Data Drive - Option 008)
(Boot Drive - Option 009)

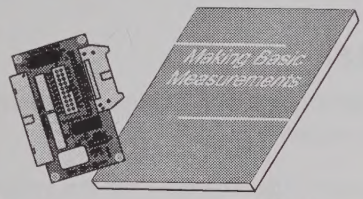


16701A/B
Expander Frame

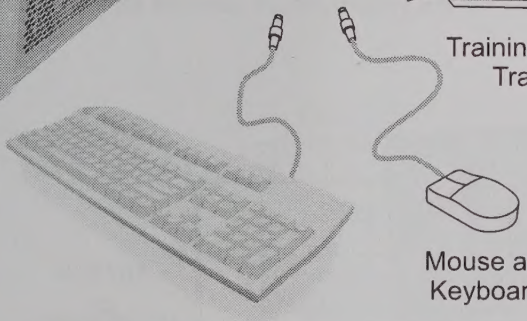


Printer
and
Cable

16702B
Mainframe

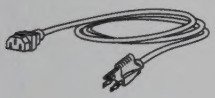


Training Board and
Training Kit

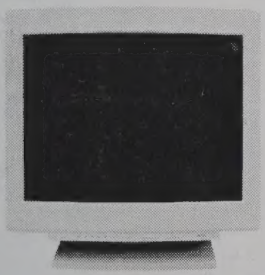


Mouse and
Keyboard

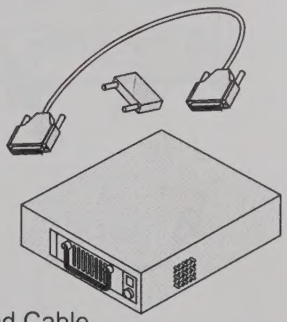
Power Cable



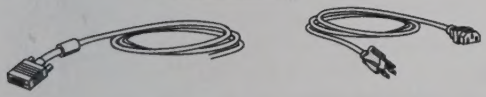
Additional Connections

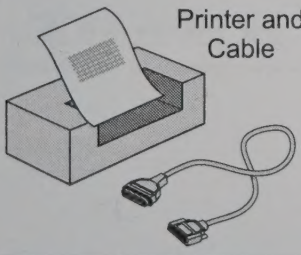


Monitor
Monitor Cable and
Monitor Power Cable
(If ordered)

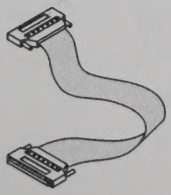


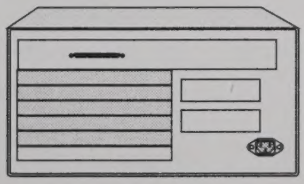
External Disk Drive and Cable
(Data Drive - Option 008)
(Boot Drive - Option 009)





Printer and
Cable



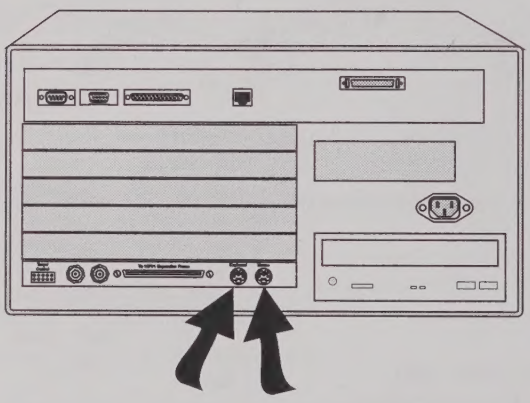


16701A/B Expander Frame

Note!

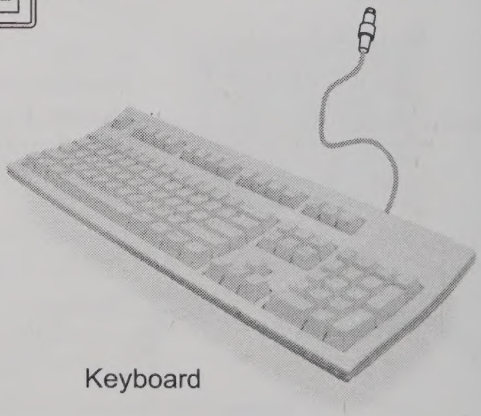
The 16700B must have the system mouse and keyboard connected for the system to boot up properly.

Once enabled on the LAN, the system can be operated remotely without a keyboard or mouse.



16700B
or
16702B

Mouse

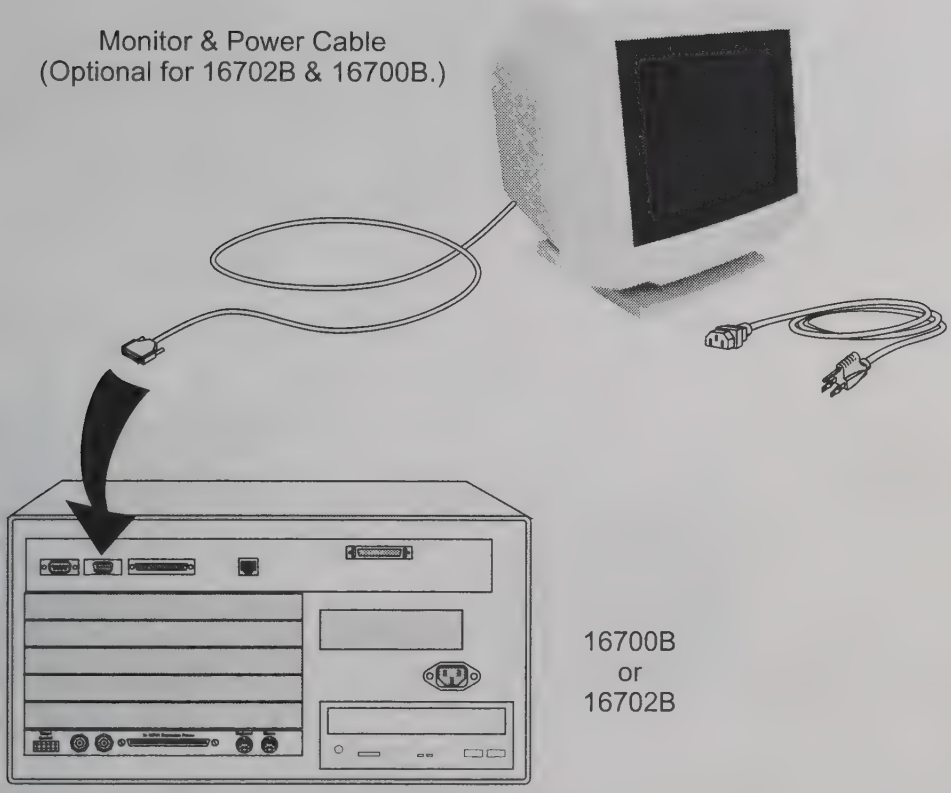


Keyboard

Note!

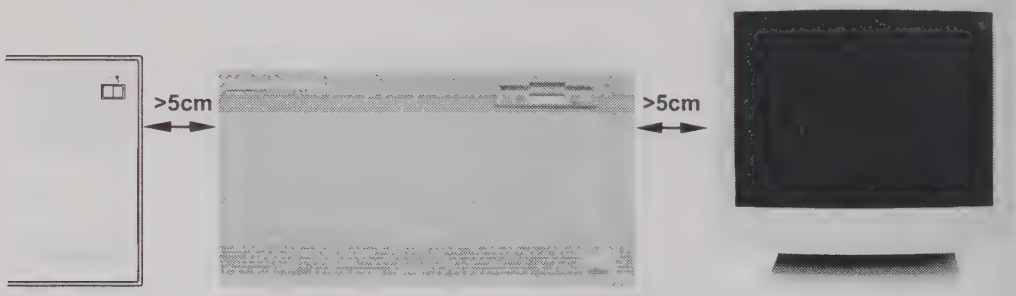
If applicable, international versions of the power cables can be found in the accessories box.

Monitor & Power Cable
(Optional for 16702B & 16700B.)

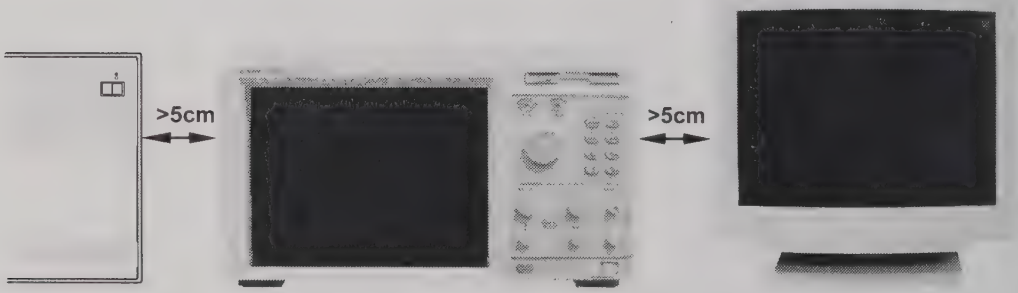


16700B
or
16702B

Allow a minimum of 5 cm spacing between instruments for proper cooling.



16700B



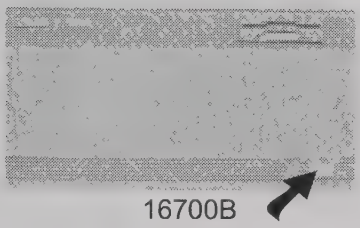
16702B

for 16700B

If you ordered the optional monitor with your logic analyzer, the monitor resolution setting is pre-configured for 1280 x 1024 at the factory.

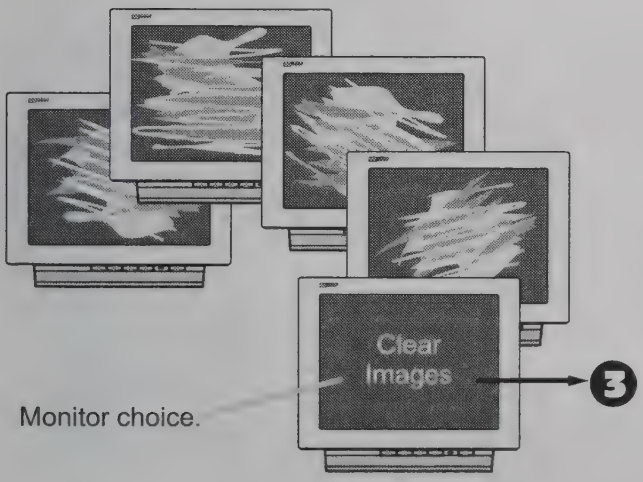
If you already have a monitor and ordered your logic analysis system without the optional monitor, you will need to configure your monitor. The display will change on the screen every few seconds as the system cycles through the monitor resolution choices. Make the appropriate selection when it appears.

1 Monitor power



2 System power

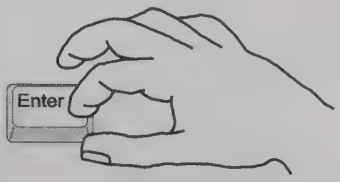
(Cycling choices)



3

Monitor choice.

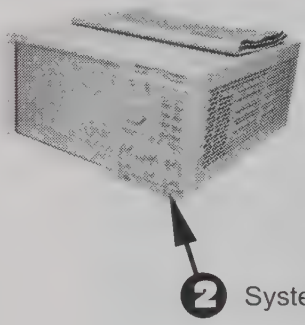
Press ENTER to select the monitor choice and "Y" to confirm.



for 16702B

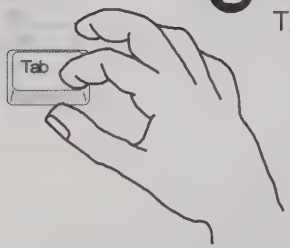
Note! Use this procedure if you wish to configure an optional monitor to an 16702B.

1 Monitor power

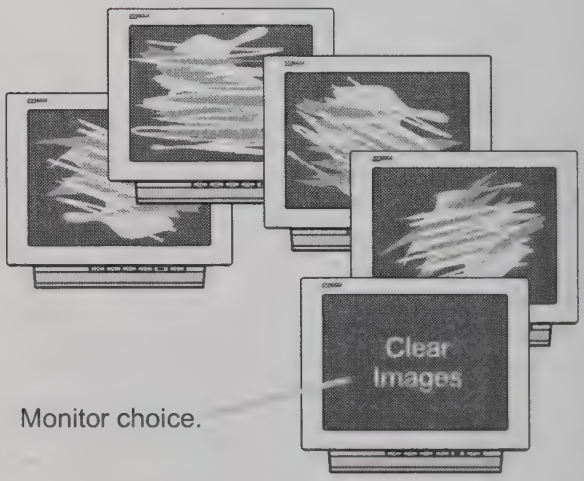


2 System power

3 Immediately press the TAB key about ten times.

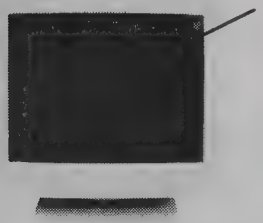


(Cycling choices)



Monitor choice.

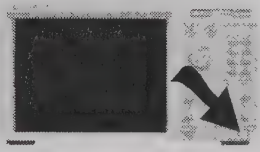
4 Press ENTER to select the monitor choice and "Y" to confirm.



16700B

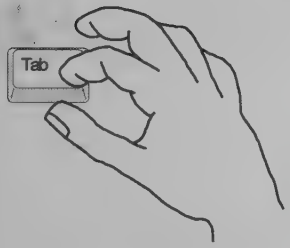
1. Monitor power

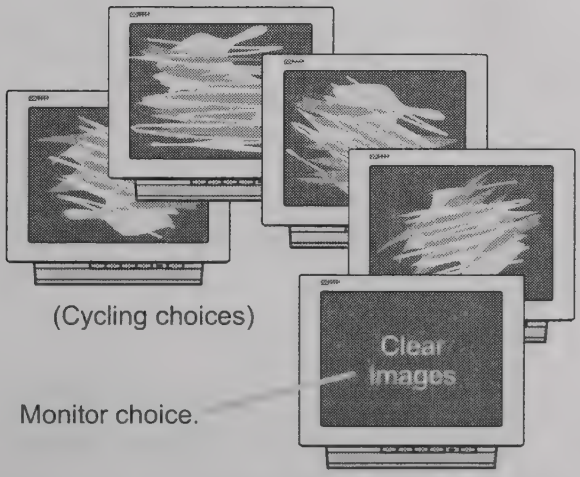
2. System power



16702B

3. Immediately press the TAB key about ten times.

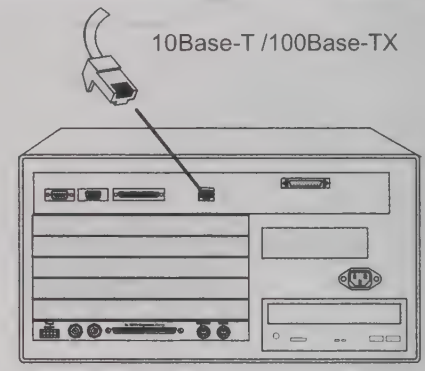




(Cycling choices)

Monitor choice.

4. Press ENTER to select the monitor choice and "Y" to confirm.



16700B or 16702B

GO TO **Help**

On This Window
On Main System
Open Second Help Window (English)
Open Second Help Window (Japanese)
Select Help Language
About

File Edit Search Navigate Help

Agilent Technologies **16700A/B-Series Logic Analysi**

- Making Measurements – Setting up a measurement, loading a config file, etc
- Measurement Examples – Setting up common measurements
- Using Measurement Tools – Instrument, Analysis, Display, Emulation and Utility tools
- System Overview – Getting to know your logic analysis system.
- System Administration – Setting up and maintaining your logic analysis system.
- Connectivity – Netscape, ...sage, Remote Front Panel, and the RPI.
- Getting Help – Available help resources and searching for help

The File Management Tools

- Create, D...
- Load, Sav...

File Edit Search Navigate Help

The System Administration Tools

The *System Administration Tools* window is ... defaults, network configurations, and perform... operating system file set.

Networking

- Analysis System Network Setup

  Configuring the Network
  ...sing the Name Resolver t... Addresses
- Windows 95/NT File System Conne...

  Mapping Windows/NT Network Drives
  Share Analyzer Drive
- Configuring the NFS
- Network Utilities

  FTP (file transfer protocol)
  Telnet
  Ping

Admin

File Edit Search Navigate Help

Configuring the Network

NOTE

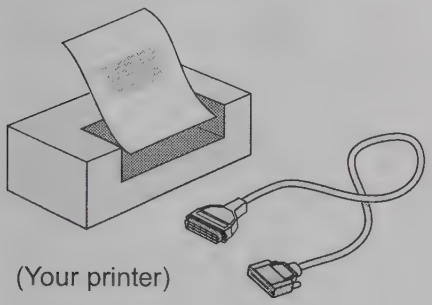
This operation may require *System Administration Privileges*.

You configure a network to set connectivity between all other networks and computers on those networks. With a properly configured network, you can interact with other computers to run the logic analysis system as well as perform file operations or run programs on other computers

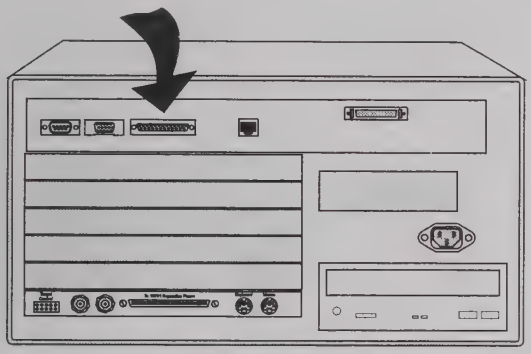
Network Setup

1. From the Networking tab in the System Administration Tools window, select *Network Setup....*
2. Select Networking *Enable*
3. Type the Hostname
4. Type the Internet Address (IP)
5. Type the Gateway Name
6. Type the Gateway IP
7. Type the Subnet Mask
8. Select *OK*

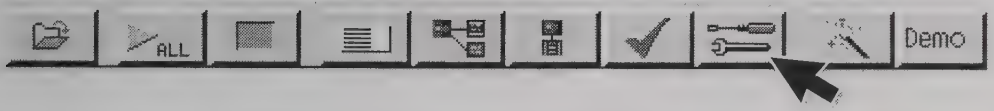
NOTE

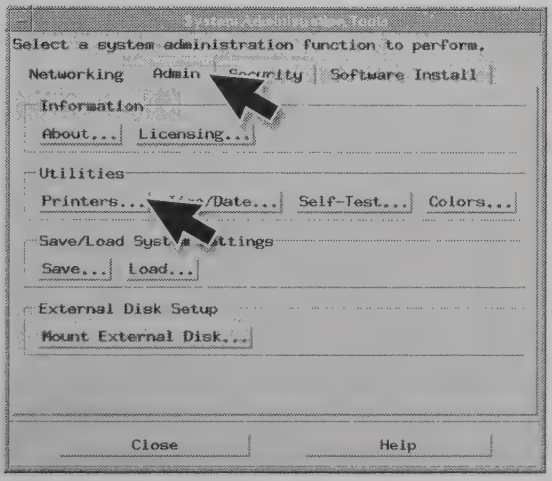


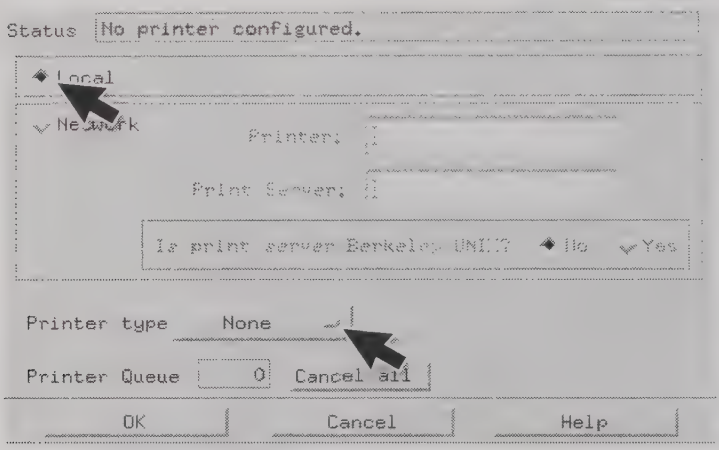
(Your printer)

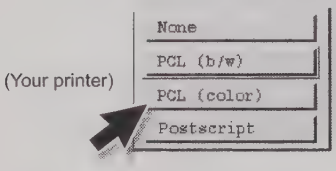


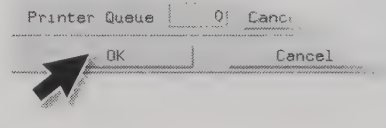
16700B or 16702B

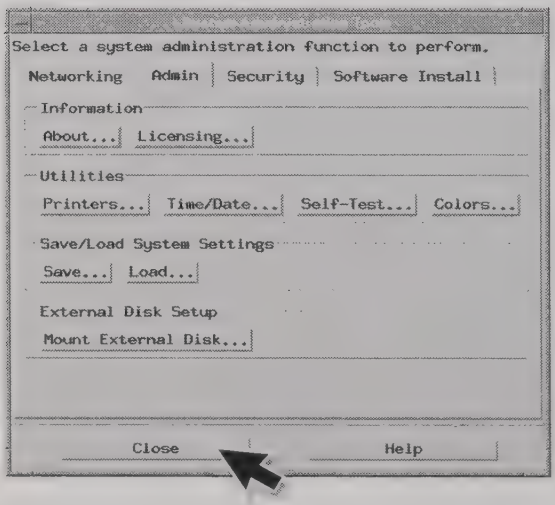










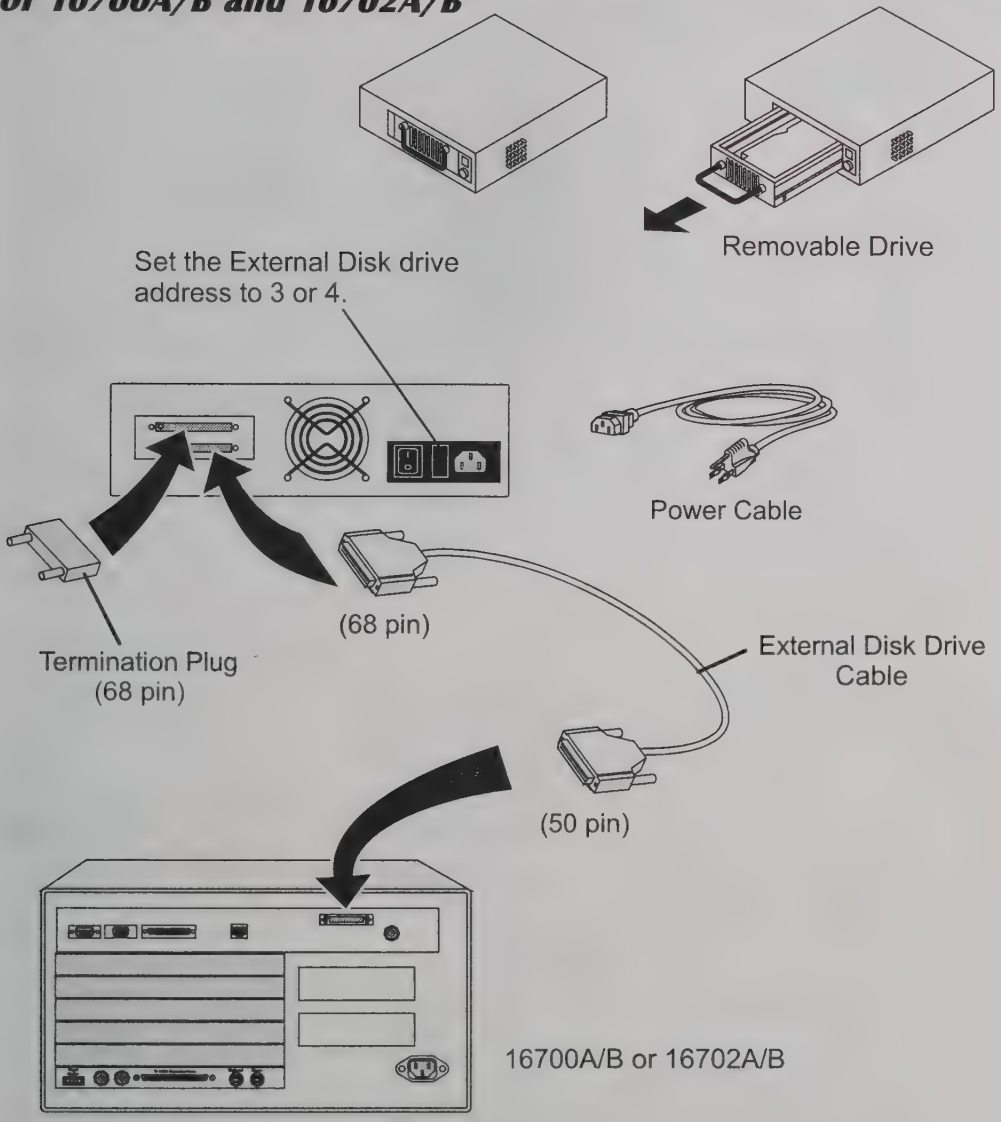


Note!

Refer to “Network Printer Setup” in the online help for networked printers.

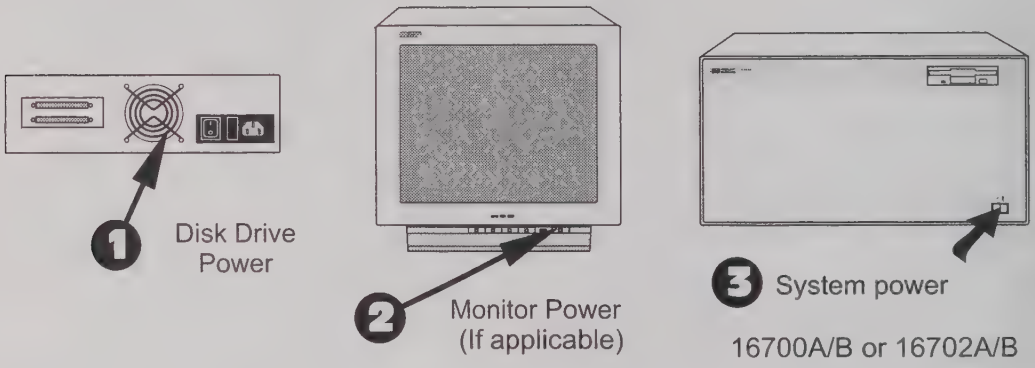
Printer Setup
Done

as External Data Drive (Option 008) for 16700A/B and 16702A/B

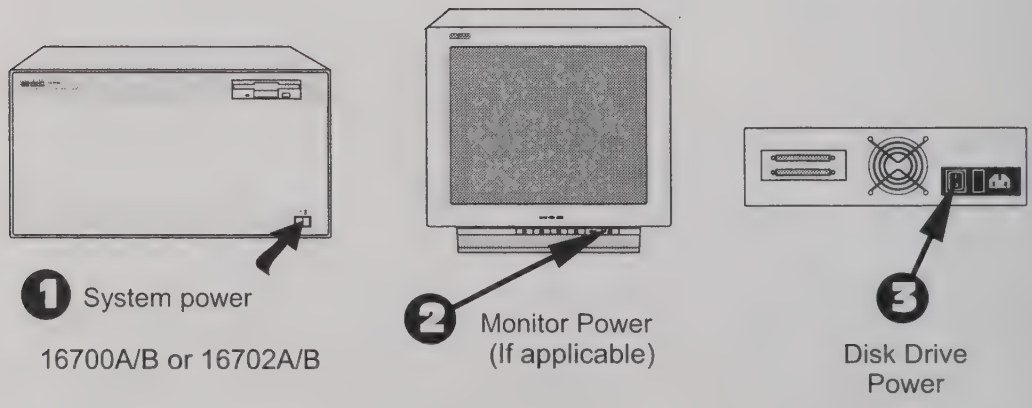


as External Data Drive (Option 008) for 16700A/B and 16702A/B

To power up the system.....



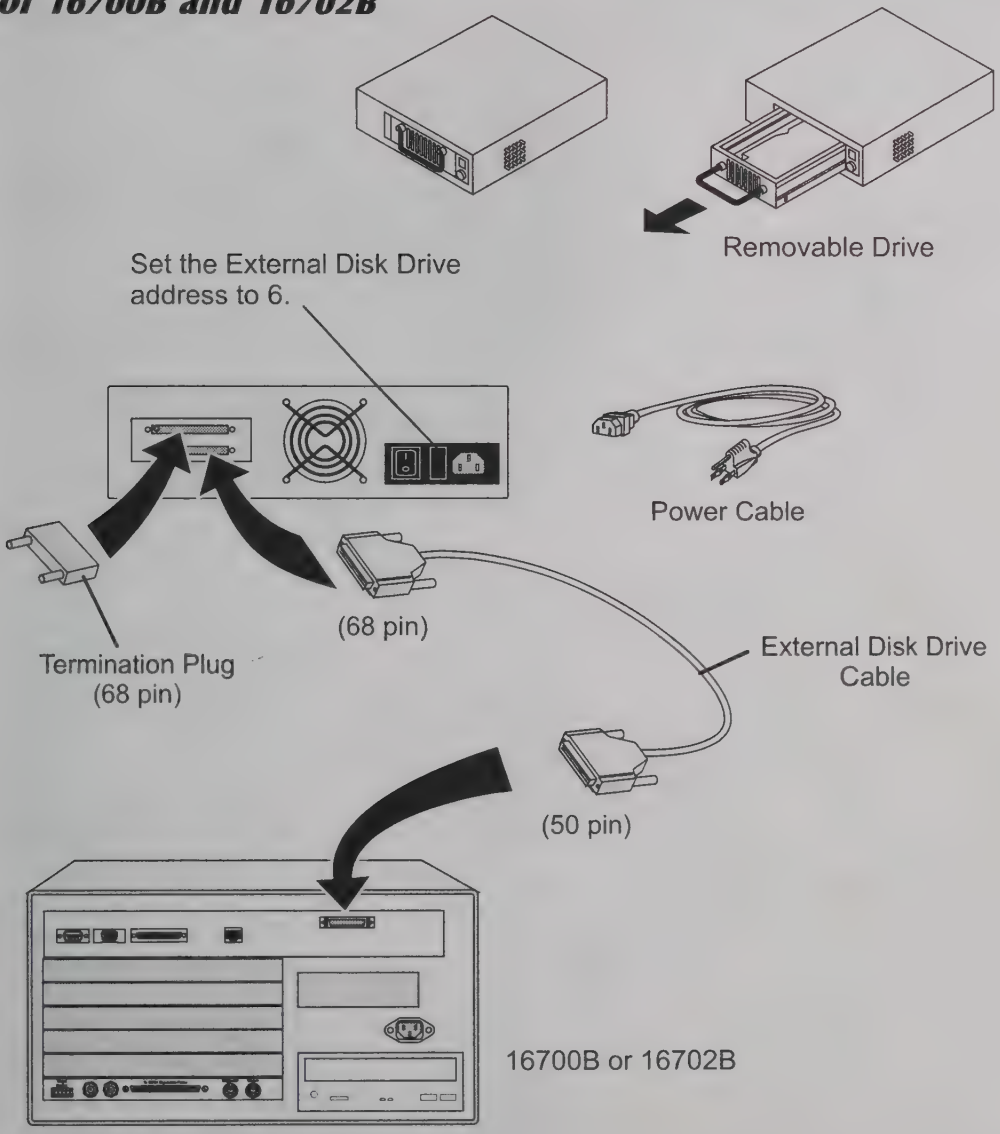
To power down the system.....



Data Drive

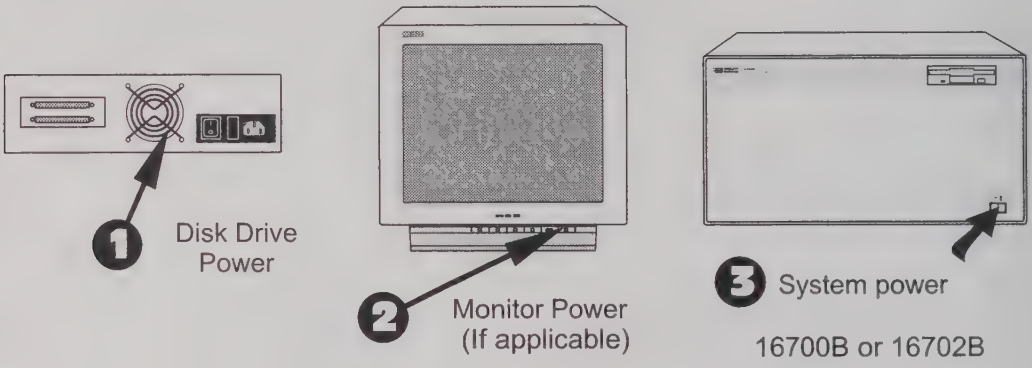
Done

as Removable Boot Drive (Option 009) for 16700B and 16702B

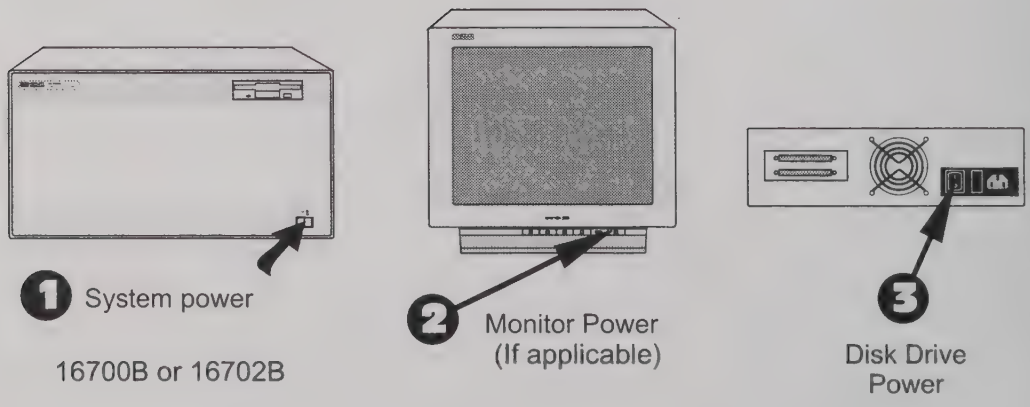


as Removable Boot Drive (Option 009) for 16700B and 16702B

To power up the system.....

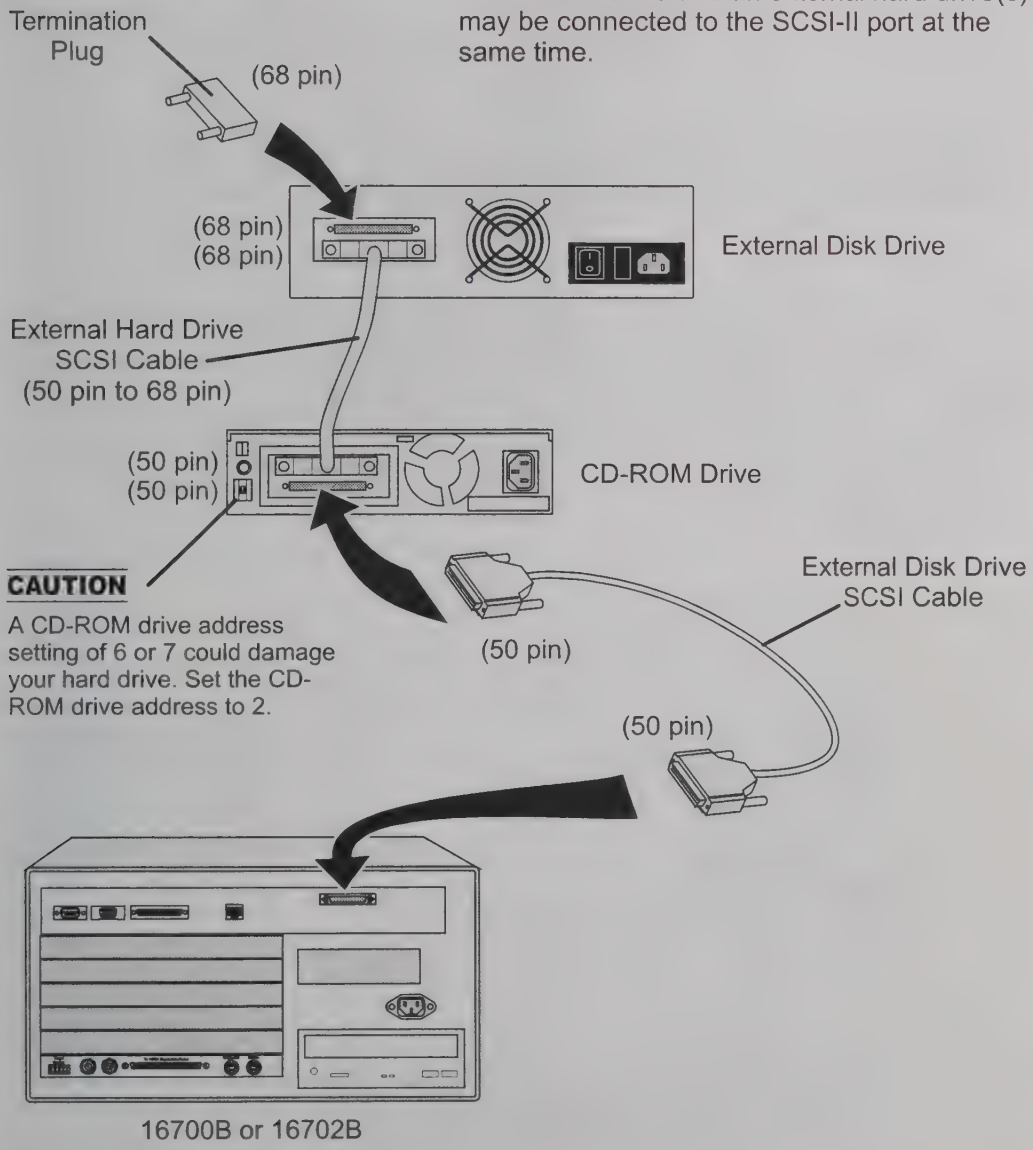


To power down the system.....



for 16700B and 16702B

A CD-ROM drive and an external hard drive(s) may be connected to the SCSI-II port at the same time.

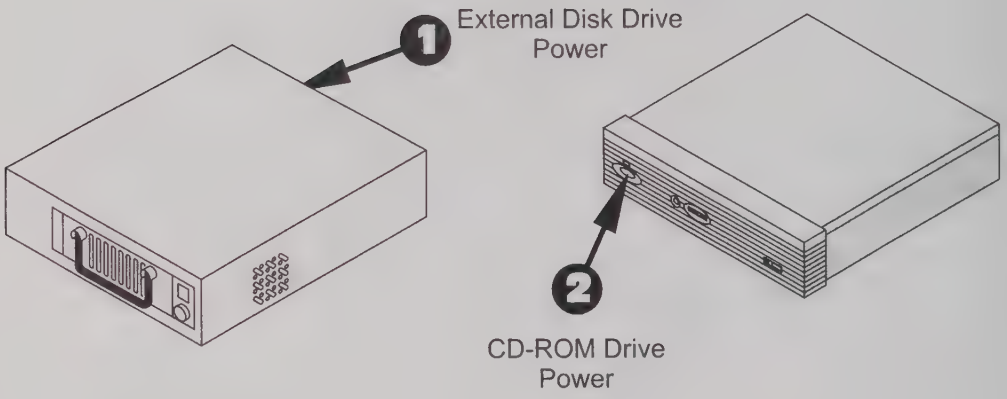


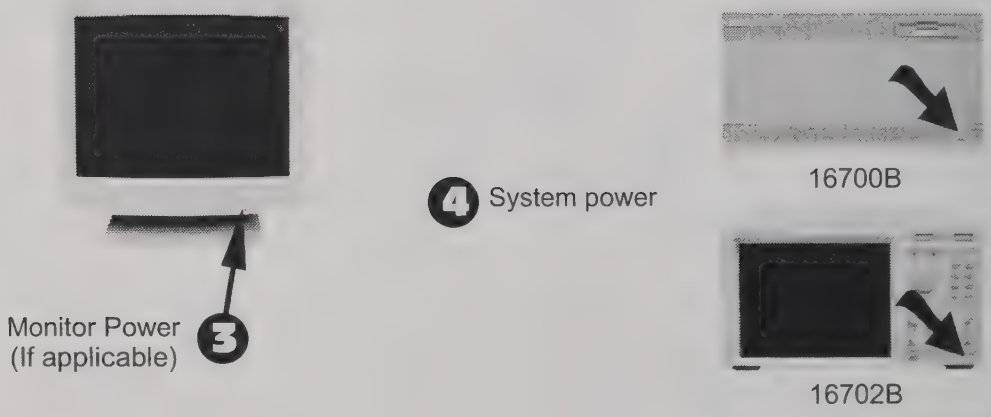
CAUTION

A CD-ROM drive address setting of 6 or 7 could damage your hard drive. Set the CD-ROM drive address to 2.

16700B or 16702B

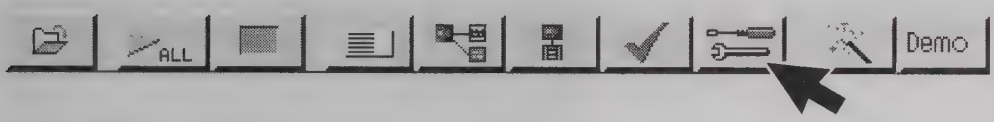
for 16700B and 16702B

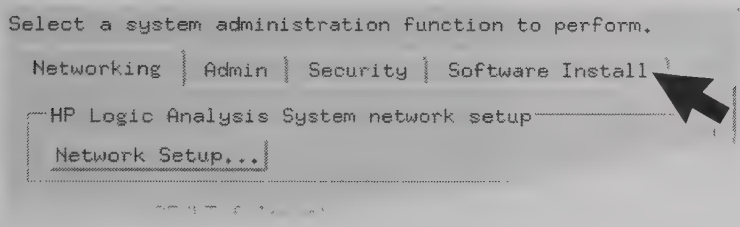


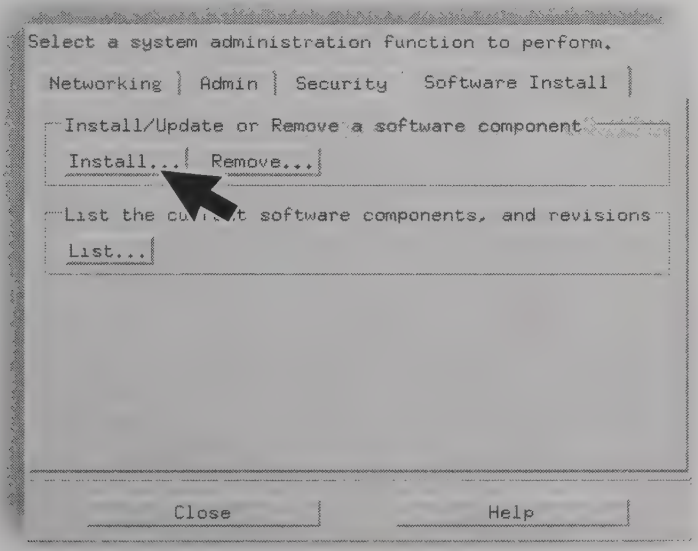


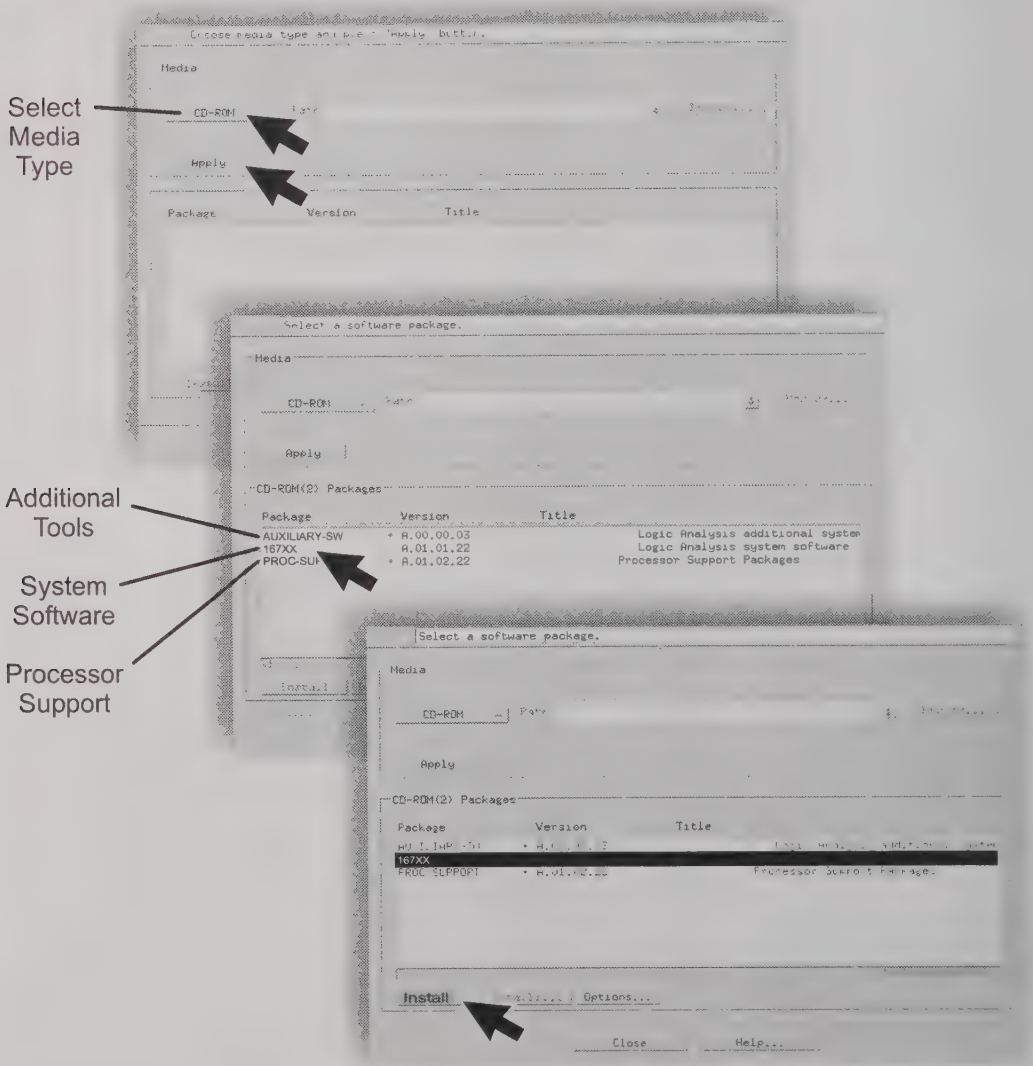
Done

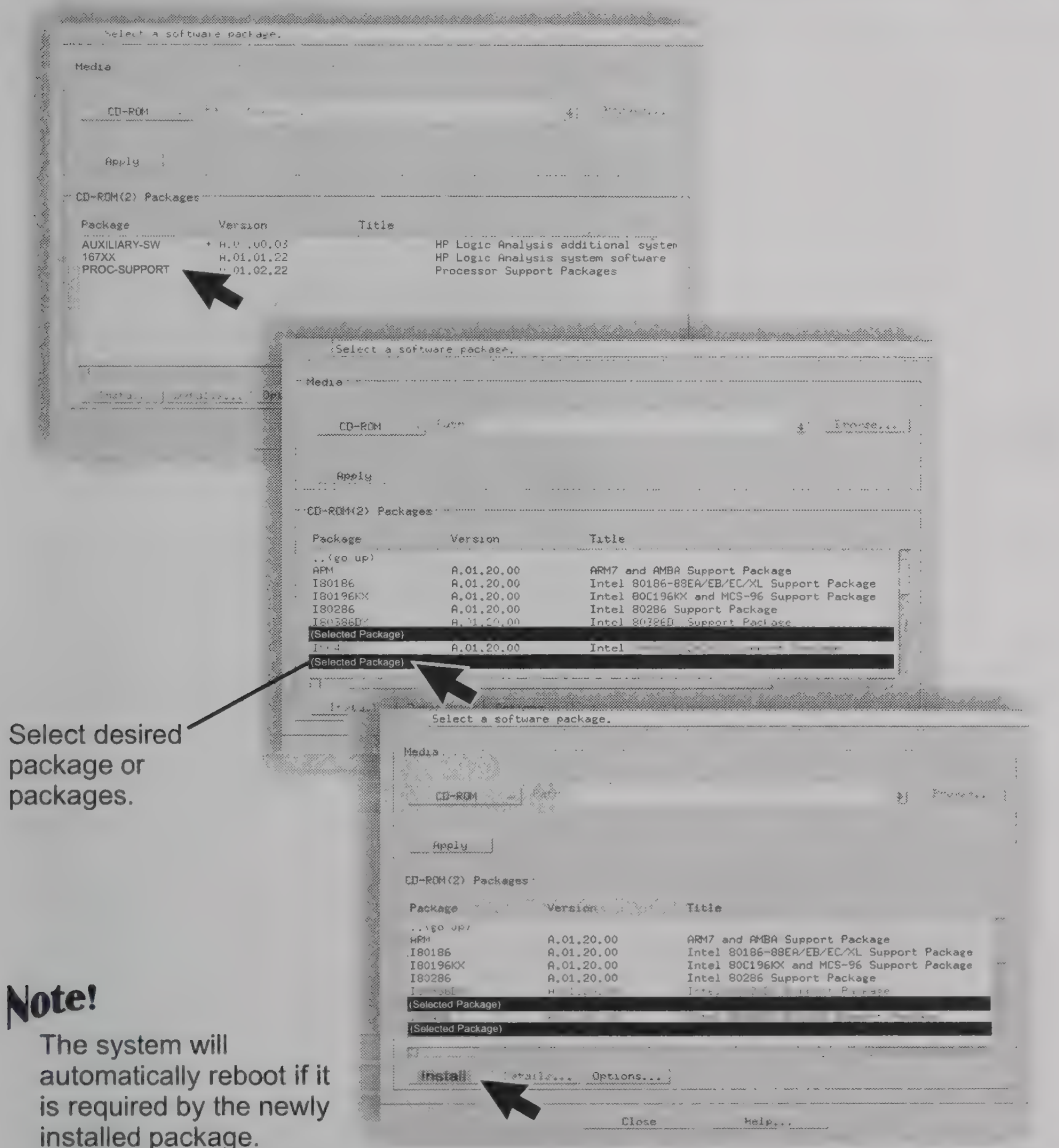
Note! When a system is shipped, the factory installs the current operating system and ordered processor support packages and tools.








Select Media Type
Additional Tools
System Software
Processor Support
Media
CD-ROM
Apply
Package
Version
Title
Select a software package.
CD-ROM(2) Packages
AUXILIARY-SW
167XX
PROC-SUP
A.00.00.03
A.01.01.22
A.01.02.22
Logic Analysis additional system
Logic Analysis system software
Processor Support Packages
Install
Options...
Close
Help...



Select desired package or packages.

Note!

The system will automatically reboot if it is required by the newly installed package.

Software Installation

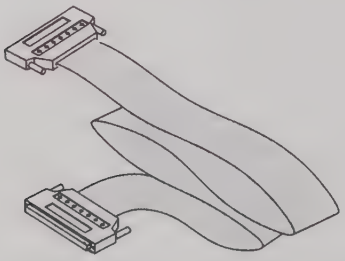
Done

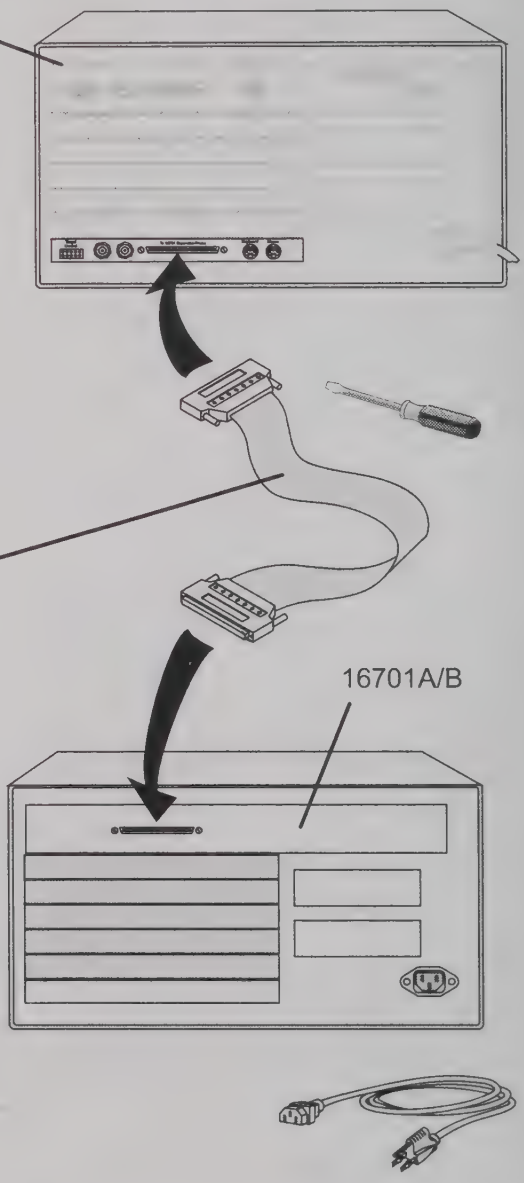
16700B or 16702B

1. Install your measurement modules in the 16701A/B expander frame.
2. Connect the desired length interconnect cable and tighten the connector screws with the screw driver provided.
3. Connect the power cable to the 16701A/B.
4. Power up the 16700B or 16702B system.

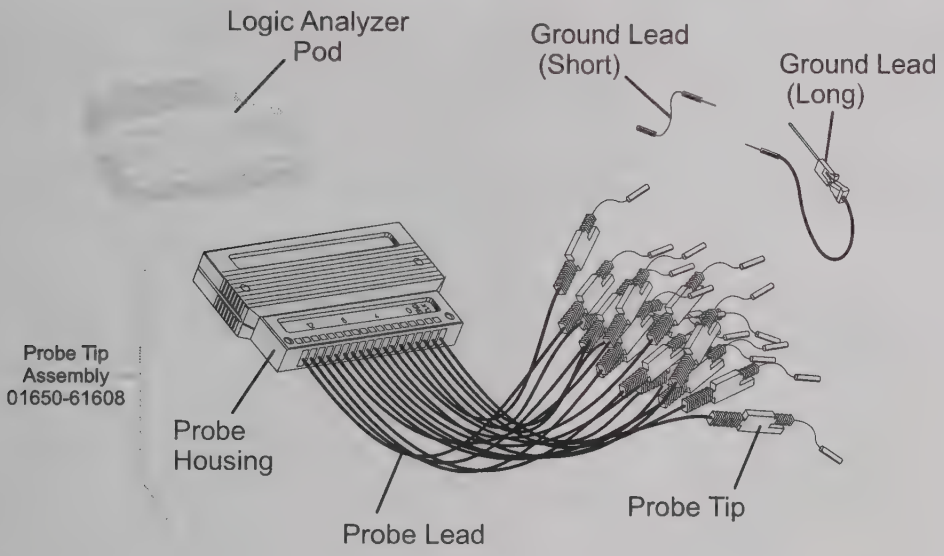
16701A/B Interconnect Cable

Choose from the 30cm (12 inch) length, or the 90 cm (36 inch) length.

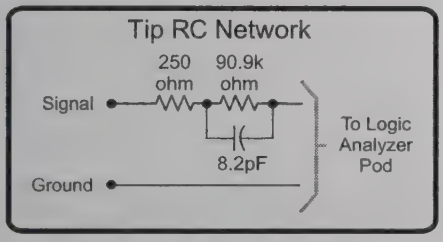


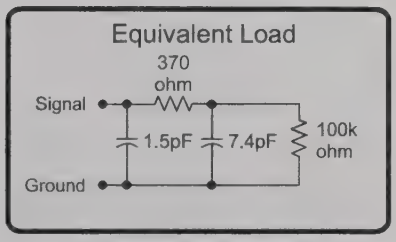


General-Purpose Probing



General-purpose probing requires connecting probe leads to individual signal lines. It is generally the most cumbersome method, but it is also the most flexible. Because of the passive design of the probe, there are no active circuits at the outer end of the cable.

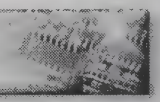




Includes logic analyzer

The advantages of this are:

- High input impedance. *(See Equivalent Load.)*
- Signal ground at the probe tip for high-speed timing signals.
- Inexpensive, removable probe tip assemblies.



General-Purpose Probing

The signal and ground leads can be connected directly to the target system. This requires installing 0.63 mm (0.025 inch) square pins, or round pins with a diameter between 0.66 and 0.84 mm (0.026 and 0.033 inch) directly on the board. You can also use an IC test clip with pins with those dimensions.

You can also connect the leads using through-hole grabbers, which have small enough hooks to fit around adjacent IC pins, or by using surface-mount grabbers designed for fine surface-mount component leads.

Proper grounding will improve the signal quality and is essential for high speed measurements. Each pod has a pod ground lead, which must be used. You can use only this ground, but signal quality for high speed signals will be poor.

For better results, ground not only the pod, but every third or fourth lead.

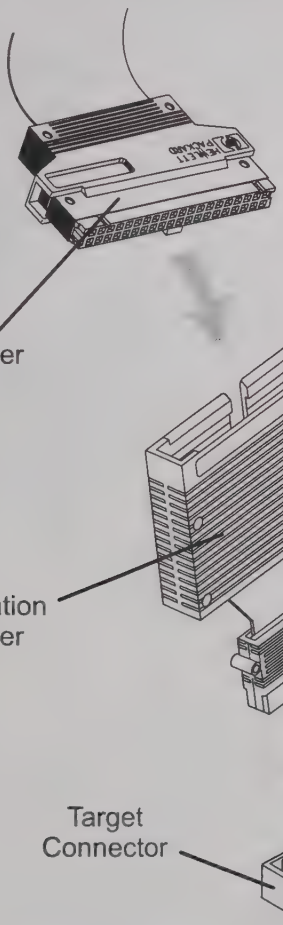
For best results, and when probing signals with rise and fall times of 1 ns or less, ground each probe lead with no more than a 2-inch ground lead as well as grounding the pod with the pod ground lead.

- You can replace damaged leads. Disconnect individual probe leads by pushing on the latch at the lead base with a ball-point pen.
- Connect grabbers to the leads by slipping the end of the lead over the recessed pin located in the side of the grabber.

Note! The minimum input overdrive is the greater of 250 mV or 30% of signal amplitude. The maximum probe input voltage of each logic analyzer probe is 40 volts peak.

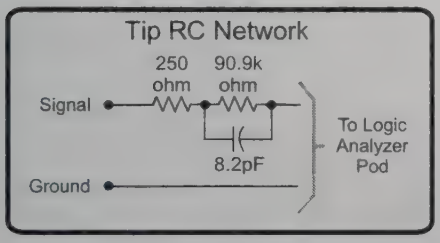
Termination Adapter

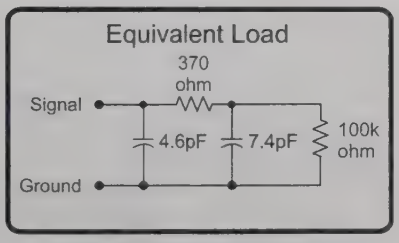
The logic analyzer cable must have the proper RC network at its input in order to acquire data correctly. The optional Termination Adapter incorporates the RC network into a convenient package. It also reduces the number of pins required for the header on the target board from 40 pins to 20.



+5V	1	2	N/C
CLK1	3	4	D15
D14	5	6	D13
D12	7	8	D11
D10	9	10	D9
D8	11	12	D7
D6	13	14	D5
D4	15	16	D3
D2	17	18	D1
D0	19	20	GND

Target Connector Pinout
(Top View)

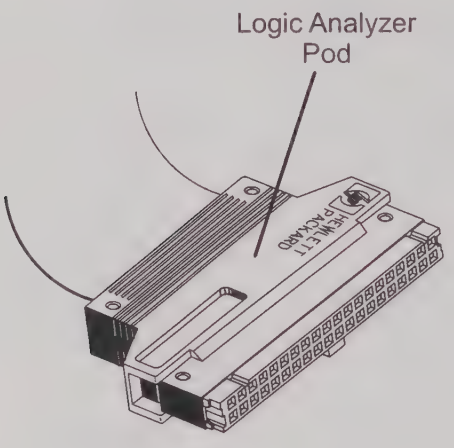


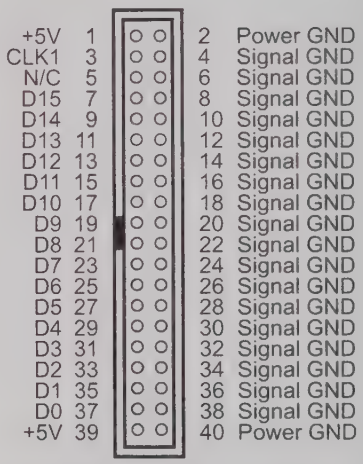


Includes logic analyzer and connector

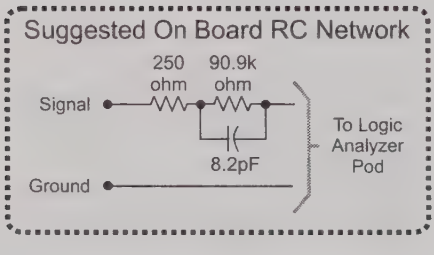
Connecting Probes to a Target System Directly

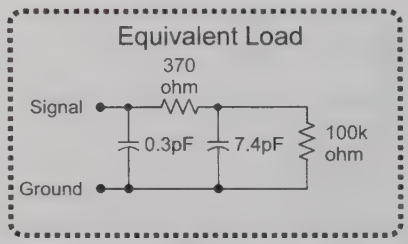
You can connect the logic analyzer cable directly to a 40-pin connector, but you must install the proper RC network directly onto the target system board. Agilent Technologies recommends two types of RC networks which are described in detail in the Application Note: ***Probing Solutions for Agilent Logic Analysis Systems.***





Target Connector Pinout
(Top View)





Includes on board RC network and logic analyzer

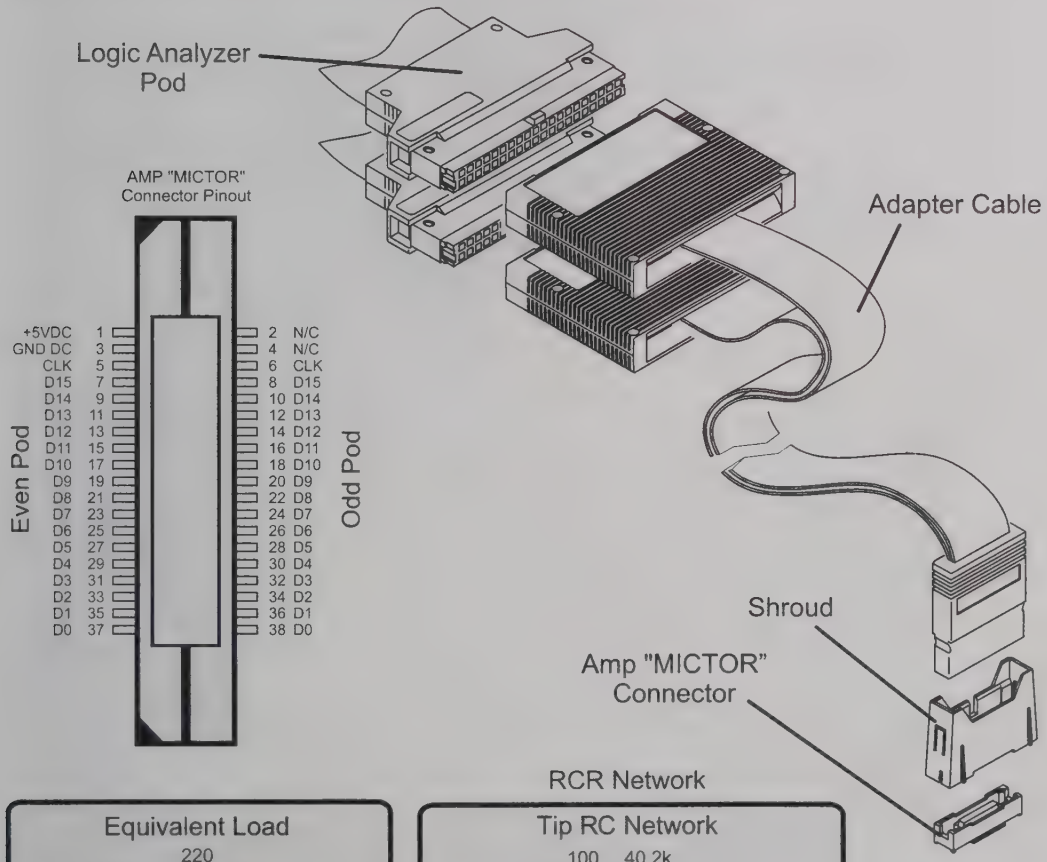
CAUTION

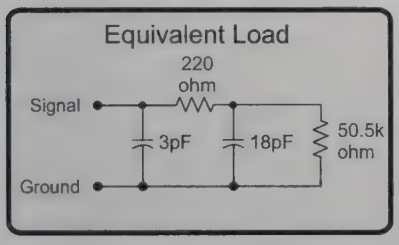
Do not exceed 0.33 amps per cable, or the cable will be damaged. The cable ground lines are chasis (earth) grounds and not "floating" grounds. All the lines are woven into a flat ribbon that is 4.5 feet long.

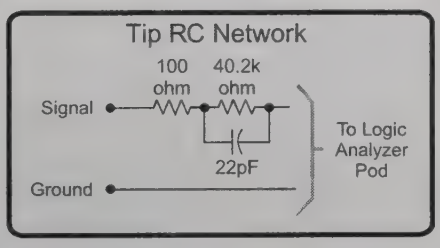
For more information, contact your Agilent Technologies Sales office and ask for the Application Note: ***Probing Solutions for Agilent Logic Analysis Systems.*** *(Or download from the web at: http://www.agilent.com/find/go/LA-AppNotes/)*

Low Voltage Termination Adapter (With Tip RC Network)

The E5339A low voltage termination adapter provides a convenient and easy way to connect two Agilent logic analyzer probe cables to a small area of a target system. The E5339A is capable of capturing data with voltage swings as low as 250mV Peak-to-Peak. An Amp "MICTOR 38" connector must be installed on your target system board.



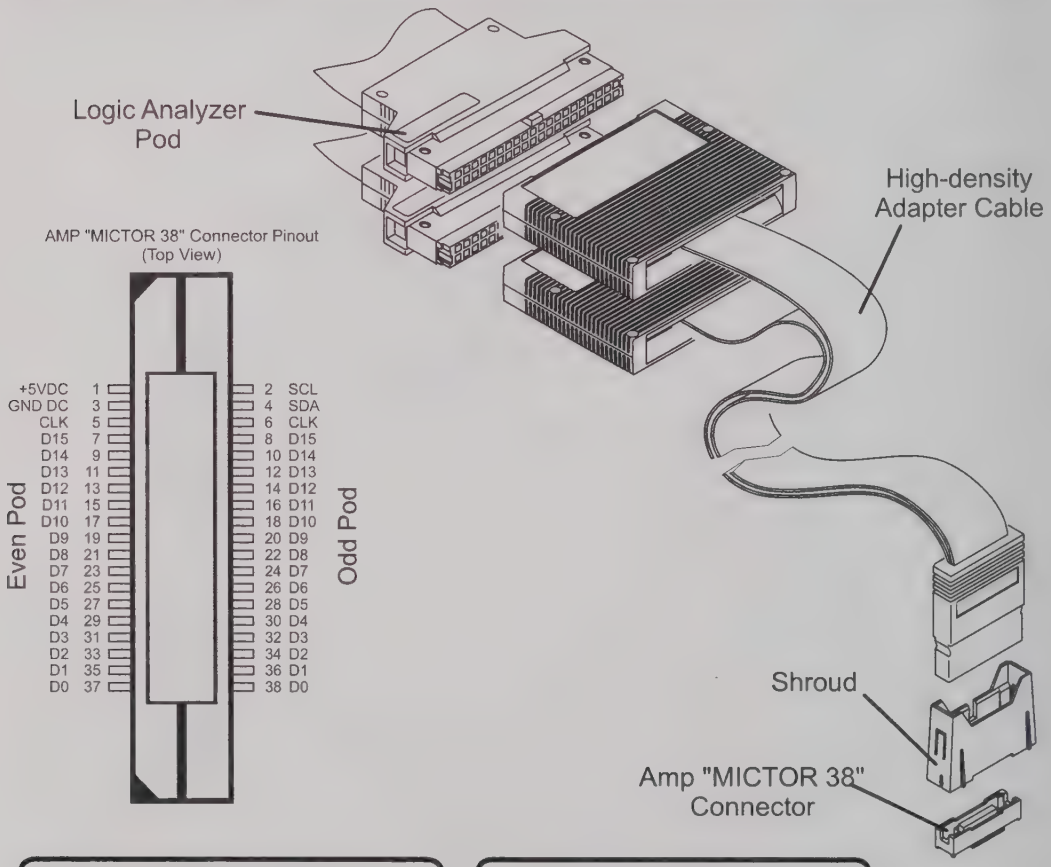


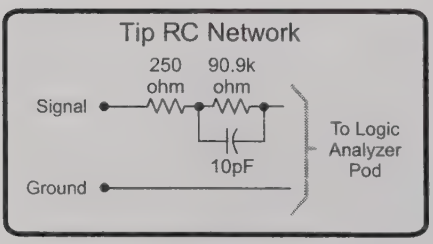


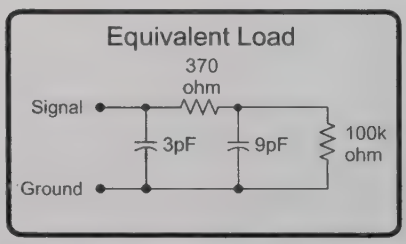
Includes logic analyzer and MICTOR connector.

High Density Adapter (With Tip RC Network)

The E5346A high-density adapter provides a convenient and easy way to connect an Agilent logic analyzer to the signals on your target system for packages that are difficult to probe, such as BGAs. An Amp "MICTOR 38" connector must be installed on your target system board.



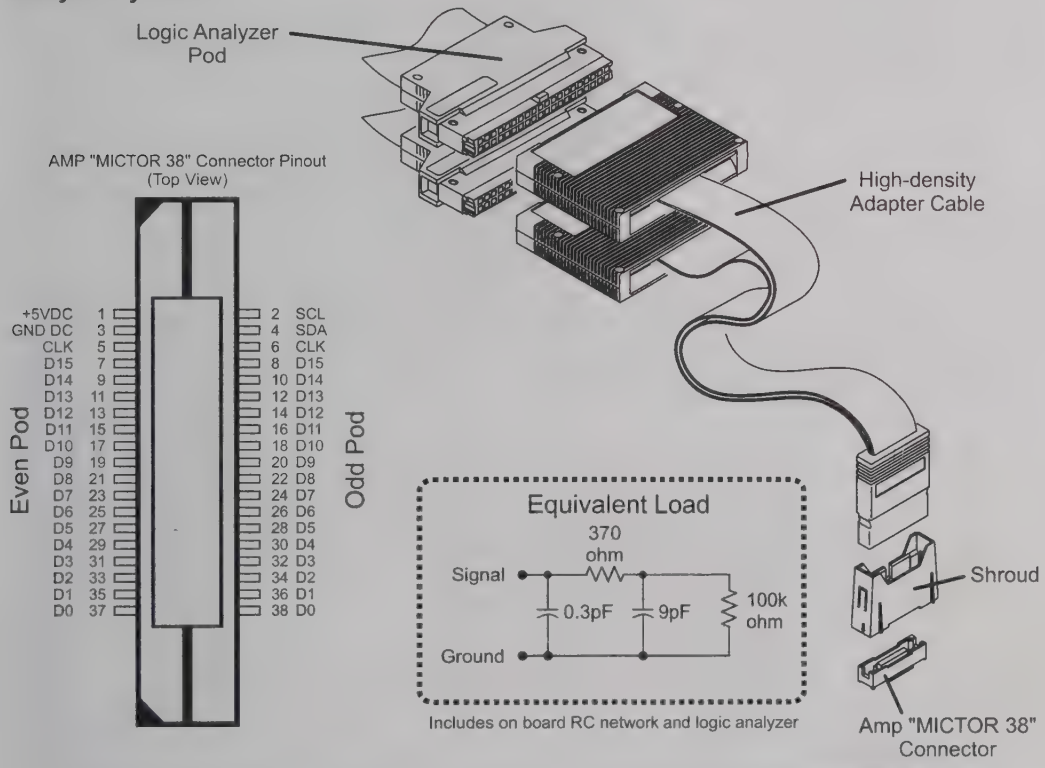


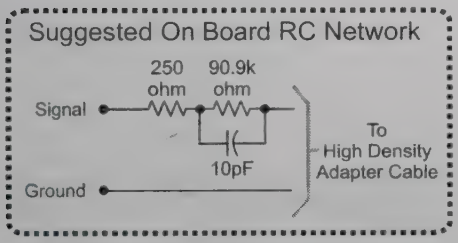


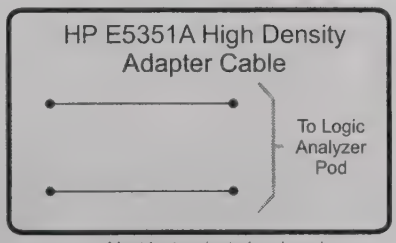
Includes logic analyzer and MICTOR connector.

High Density Adapter (No Tip Network)

The E5351A high-density adapter provides a convenient and easy way to connect an Agilent logic analyzer to the signals on your target system for packages that are difficult to probe, such as BGAs. The proper RC networks and an AMP "MICTOR 38" connector must be installed on your target system board. See Application Note: ***Probing Solutions for Agilent Logic Analysis Systems.***



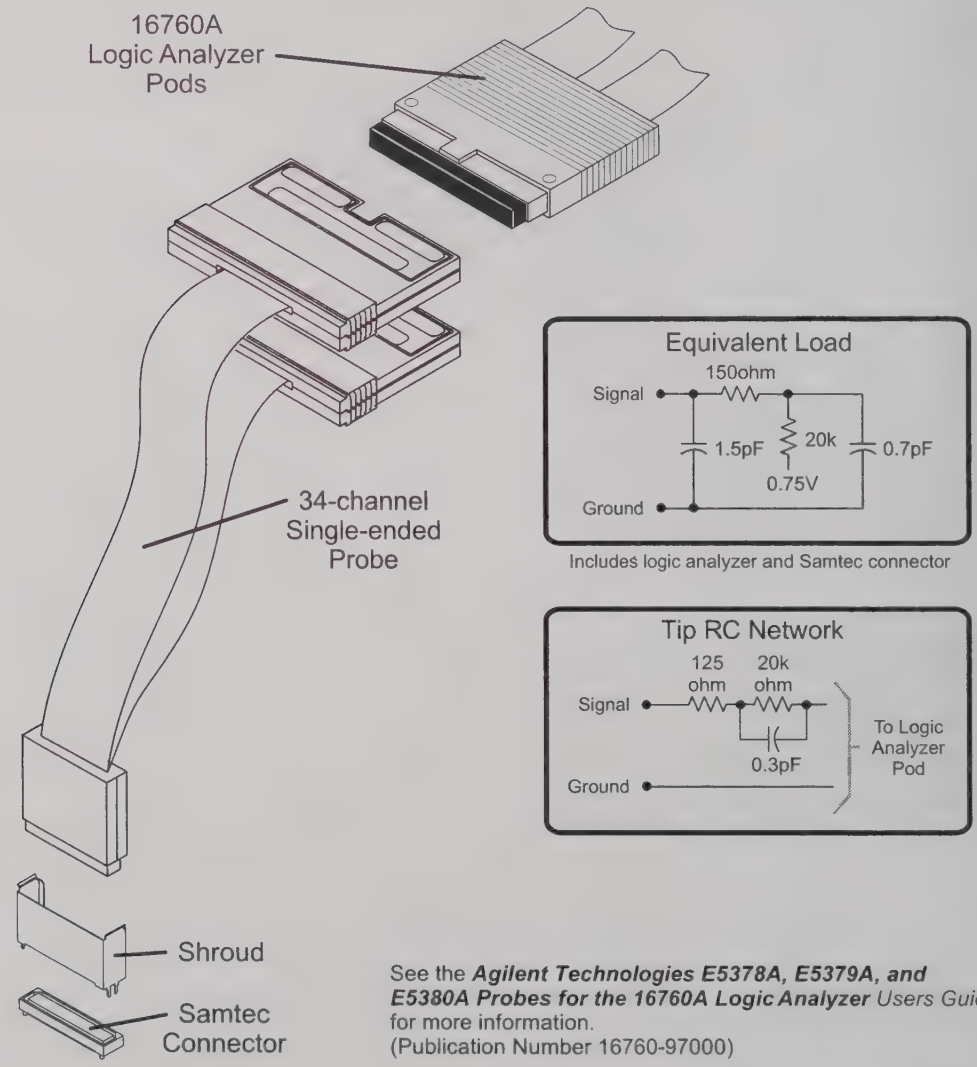




Must be terminated on-board.

Single-ended probe for the 16760A

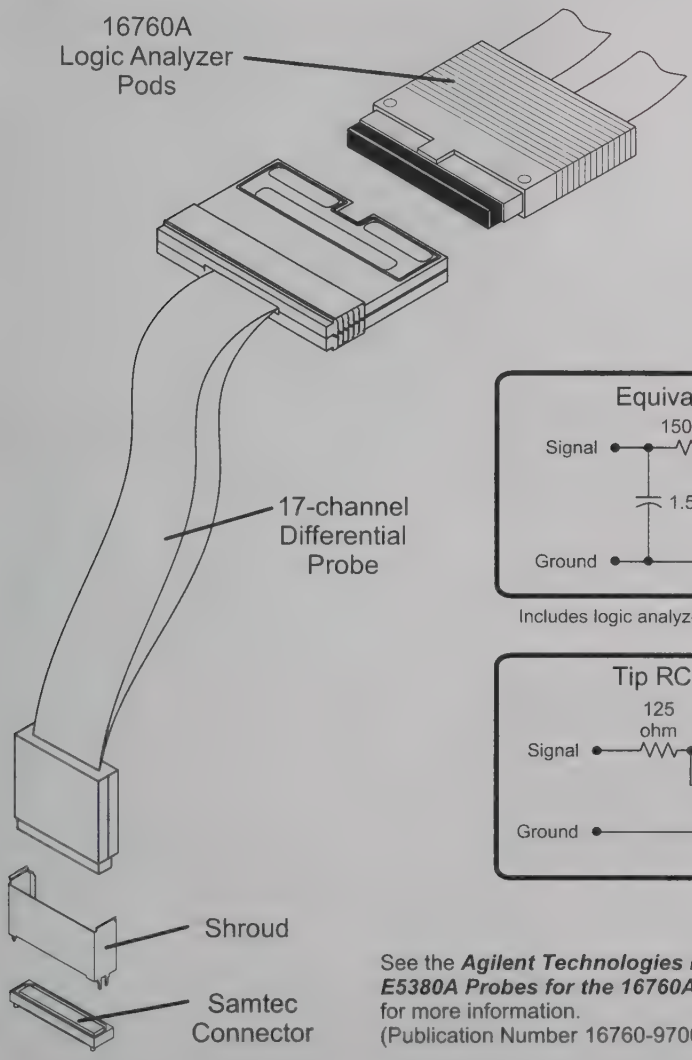
The E5378A is a 34-channel single-ended probe that is capable of capturing data up to 1.25 Gbits/second with voltage swings as low as 250mV peak-to-peak. A "Samtec" connector must be installed on your target system board.

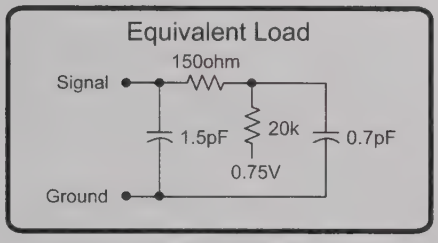


See the ***Agilent Technologies E5378A, E5379A, and E5380A Probes for the 16760A Logic Analyzer*** *Users Guide* for more information.
(Publication Number 16760-97000)

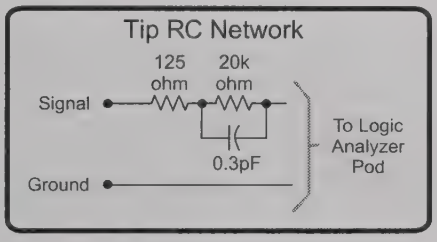
Differential Probe for the 16760A

The E5379A is a 17-channel differential probe capable of capturing data up to 1.25 Gbits/second with differential voltage swings as low as 200mV. Two E5379A probes are required to support all the inputs on one 16760A. A "Samtec" connector must be installed on your target system board.





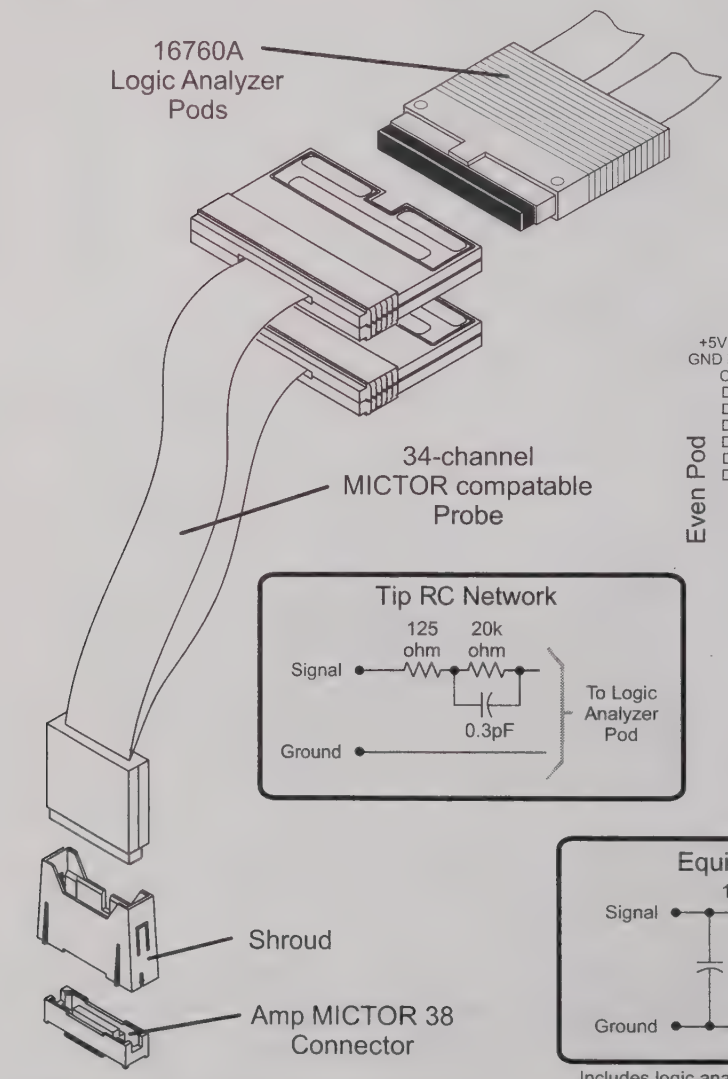
Includes logic analyzer and Samtec connector



See the ***Agilent Technologies E5378A, E5379A, and E5380A Probes for the 16760A Logic Analyzer*** *Users Guide* for more information.
(Publication Number 16760-97000)

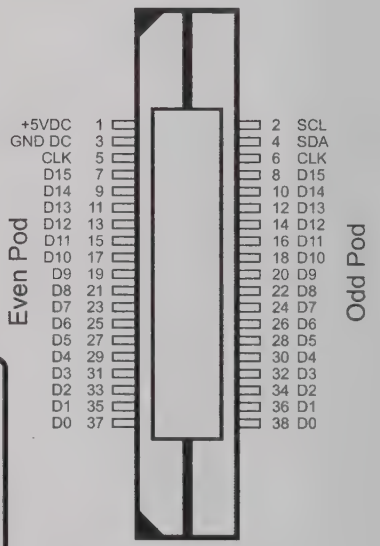
MICTOR-compatable probe for 16760A

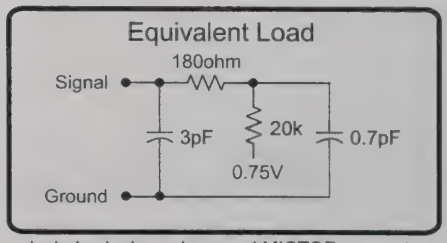
The E5380A is a 34-channel single-ended probe capable of capturing data up to 600 Mbits/second with voltage swings as low as 300mV peak-to-peak. The E5380A is designed to be compatible with the Agilent E5346A high-density probe adapter. The probe combines two 17-channel cables into a single-ended 38-pin MICTOR connector.



See the ***Agilent Technologies E5378A, E5379A, and E5380A Probes for the 16760A Logic Analyzer*** *Users Guide* for more information.
(Publication Number 16760-97000)

Amp "MICTOR 38"
Connector Pinout
(Top View)

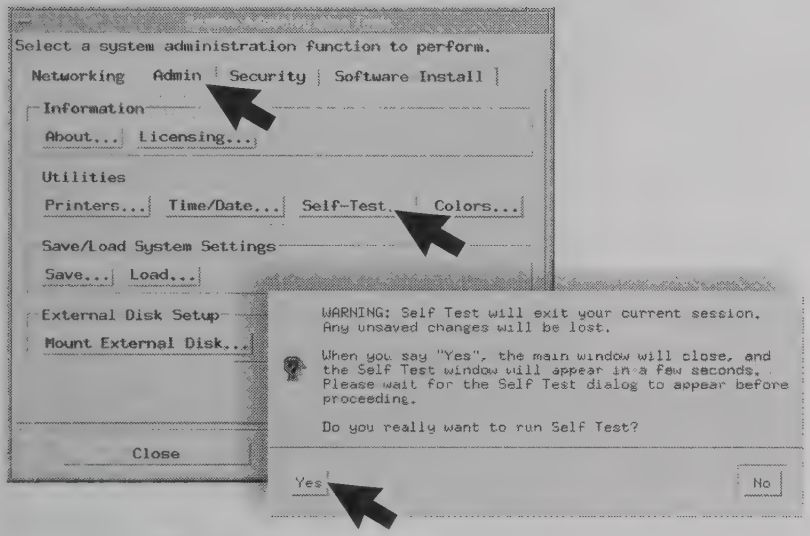


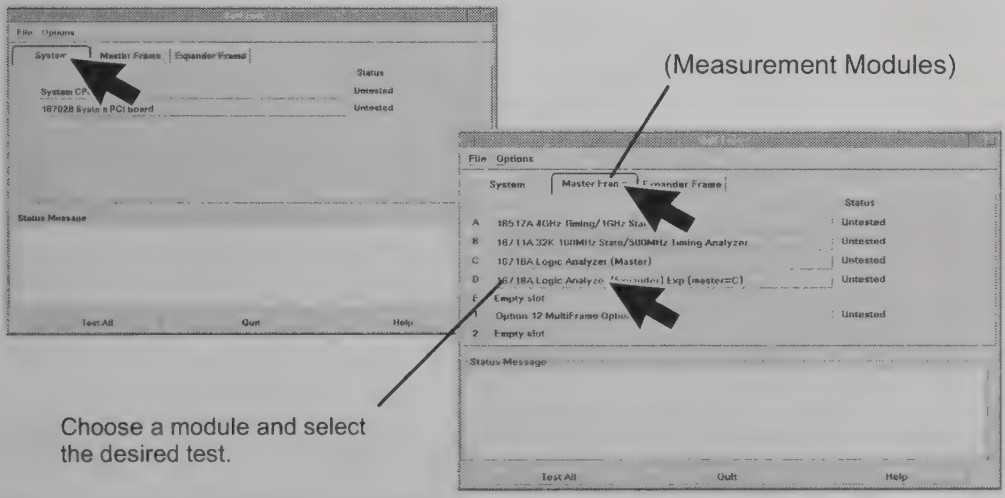


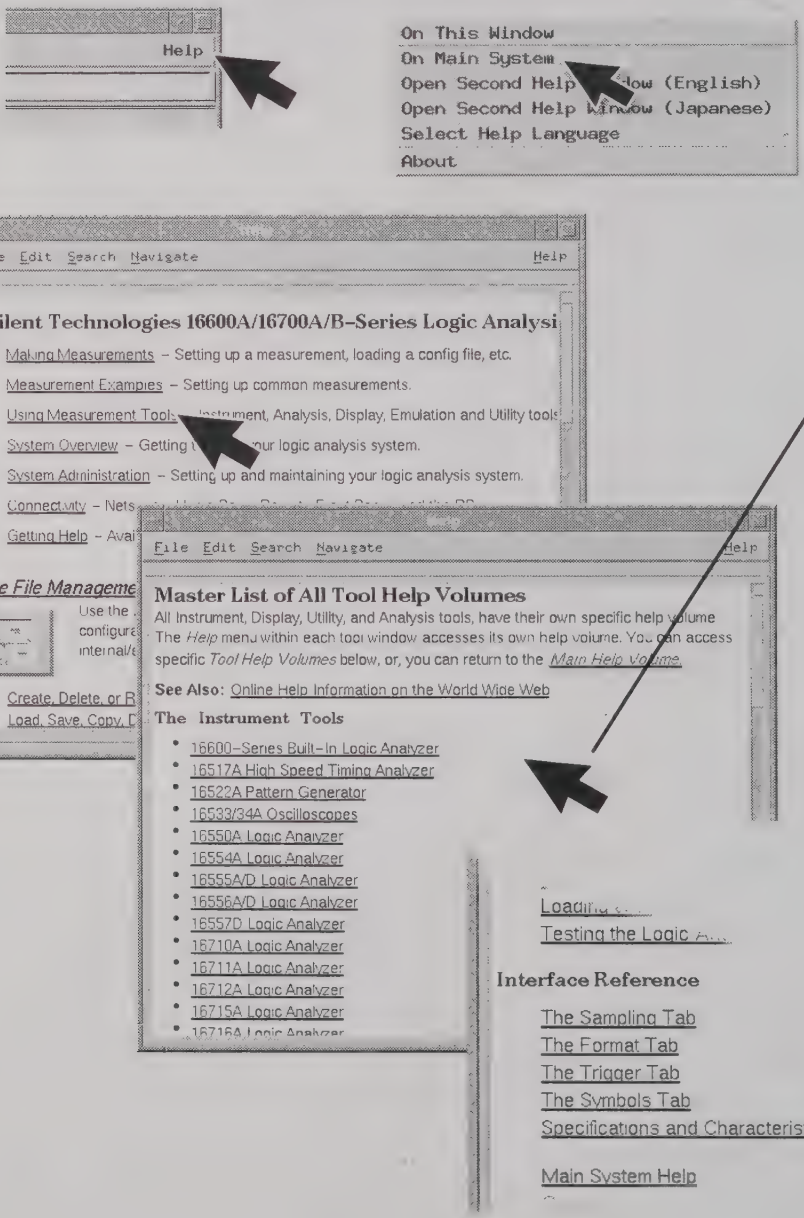
Includes logic analyzer and MICTOR connector

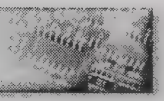
daytonap03

ALL
Demo


Select a system administration function to perform.
Networking
Admin
Security
Software Install
Information
About...
Licensing...
Utilities
Printers...
Time/Date...
Self-Test...
Colors...
Save/Load System Settings
Save...
Load...
External Disk Setup
Mount External Disk...
Close
WARNING: Self Test will exit your current session.
Any unsaved changes will be lost.
When you say "Yes", the main window will close, and
the Self Test window will appear in a few seconds.
Please wait for the Self Test dialog to appear before
proceeding.
Do you really want to run Self Test?
Yes
No


(Measurement Modules)
File Options
System
Master Frame
Expander Frame
Status
Untested
Status Message
Test All
Quit
Help
Choose a module and select
the desired test.


Help
On This Window
On Main System
Open Second Help Window (English)
Open Second Help Window (Japanese)
Select Help Language
About
File Edit Search Navigate Help
Agilent Technologies 16600A/16700A/B-Series Logic Analysi
Making Measurements – Setting up a measurement, loading a config file, etc.
Measurement Examples – Setting up common measurements.
Using Measurement Tools
System Overview
System Administration – Setting up and maintaining your logic analysis system.
Connectivity
Getting Help
The File Manageme
Create, Delete, or R
Load, Save, Copy, D
Select an instrument
File Edit Search Navigate Help
Master List of All Tool Help Volumes
All Instrument, Display, Utility, and Analysis tools, have their own specific help volume
The Help menu within each tool window accesses its own help volume. You can access specific Tool Help Volumes below, or, you can return to the Main Help Volume.
See Also: Online Help Information on the World Wide Web
The Instrument Tools
16600-Series Built-In Logic Analyzer
16517A High Speed Timing Analyzer
16522A Pattern Generator
16533/34A Oscilloscopes
16550A Logic Analyzer
16554A Logic Analyzer
16555A/D Logic Analyzer
16556A/D Logic Analyzer
16557D Logic Analyzer
16710A Logic Analyzer
16711A Logic Analyzer
16712A Logic Analyzer
16715A Logic Analyzer
Testing the Logic
Interface Reference
The Sampling Tab
The Format Tab
The Trigger Tab
The Symbols Tab
Specifications and Characteristics
Main System Help



Reinstalling the Operating System.

CAUTION *Read this section carefully before you attempt to reinstall the operating system from the CD-ROM using this procedure.* ***Everything on the hard drive will be overwritten, including user configuration, data files, and license passwords. To save your system's license information, as well as other system settings, refer to "Saving System Settings" and "Reloading System Settings" in this section.***
You will need to connect a keyboard to your 16702B in order to execute disaster recovery procedures.

A batch process is used to autoload the software and then reboot the instrument. The batch process waits for only a short timeout period for user interaction to abort the process. Otherwise, the hard drive will be initialized, the operating system will be uploaded, and the instrument will reboot.

The reinstallation process takes approximately one hour depending on the speed of the attached CD-ROM.

1. *If required, follow the steps in "Saving System Settings" and "Reloading System Settings" to create a backup file of your system settings and license passwords.*

2. *If required, follow the steps in this book to setup the instrument and CD-ROM drive.* Insert the CD-ROM containing the instrument operating software into the CD-ROM drive. Allow a couple of moments for the media to settle after inserting the media.

3. If the LAN cable is connected, disconnect it from the instrument. If needed, turn on the system and initiate the monitor selection mode. (*See the section in this book.)* Otherwise, proceed to step 4.

4. Turn on the instrument and repeatedly press the [ESC] key on the keyboard to terminate the boot process. When the boot process is terminated, a prompt will be displayed.

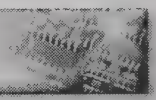
   ```
   Main Menu: Enter command >
   ```

   Press: `<Enter>`

   Type: `SEA <Enter>`

   The instrument will search for all viable boot devices on the bus, including the CD-ROM drive. The display will then show the boot devices:

   ```
   Path Number       Device Path         Device Type
   ------------      ------------        ------------------
   P0                SESCSI.6.0          IBM     DNES-309170W
   P1                SESCSI.1.0          PLEXTOR CD-ROM PX-40TS
   ```



Reinstalling the Operating System.

5. At the prompt:

```
Main Menu: Enter command >
```

Type: `BO P1 <Enter>`

```
Interact with IPL (Y, N, Q) ?>
```

Type: `N <Enter>`

6. After about 30 seconds you will see the message:

```
WARNING: The configuration information calls for a non-interactive
installation.
Press <Return> within 10 seconds to cancel batch mode
installation:
```

7. **To abort the reinstallation process at this point:**
Press the [Return] key on the keyboard within 10 seconds. (If you do nothing within the 10 second timeout, the reinstallation process will begin. The instrument will completely reload the operating system software onto the hard disk drive.)

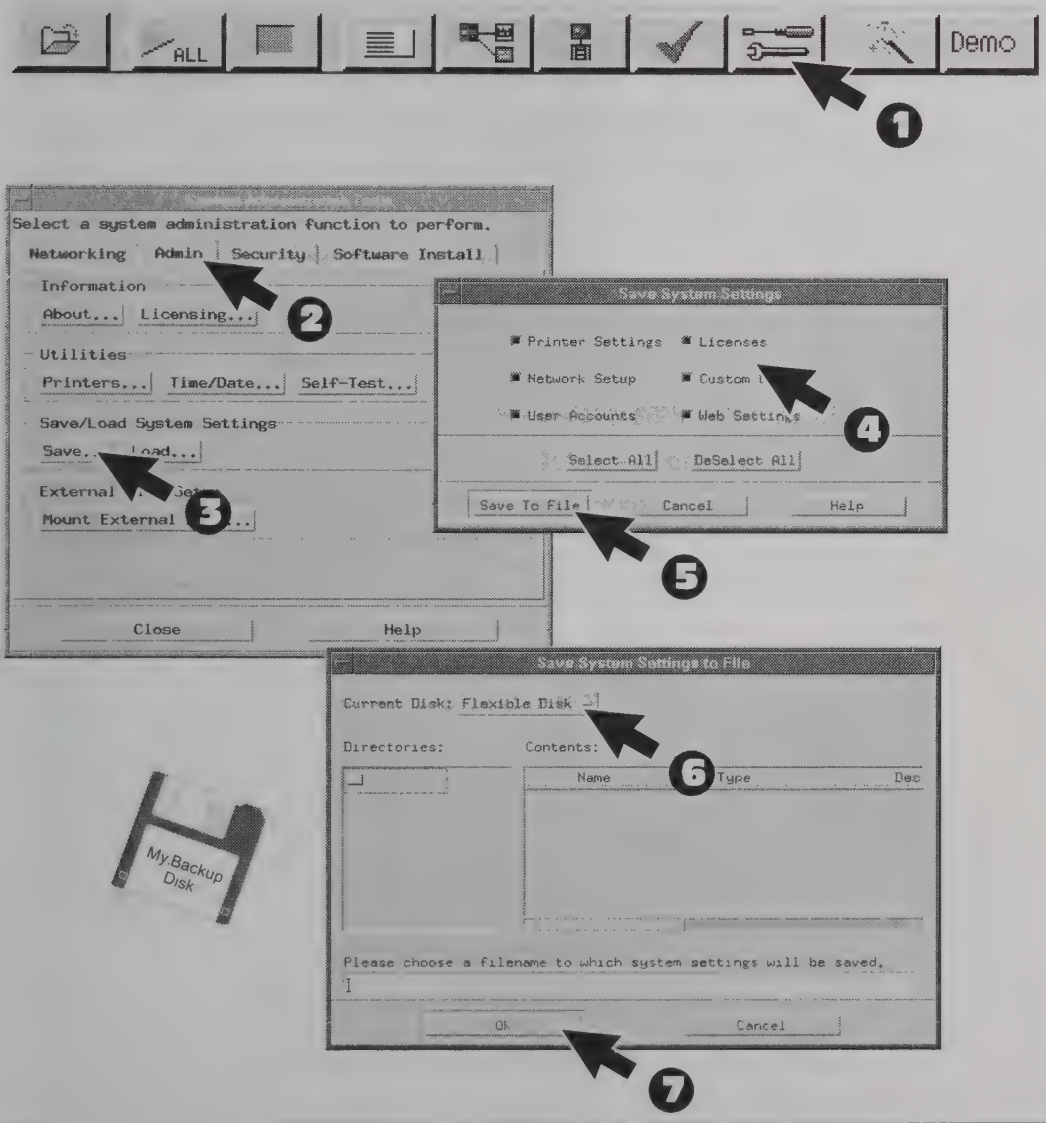
8. Processor Support Packages, Auxiliary Software, and user files must be installed manually once the operating system has been reinstalled.

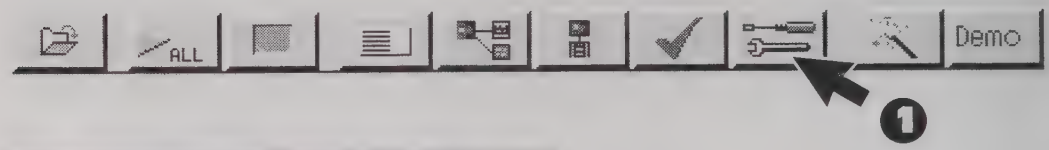
9. Follow the steps in “Reloading System Settings” to restore any license passwords and system settings saved in step 1.

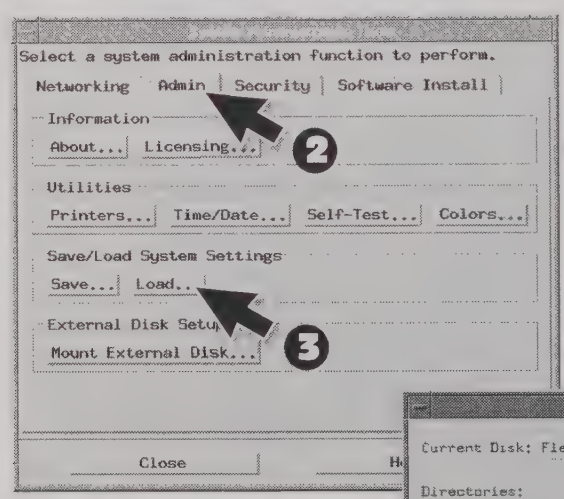
Done

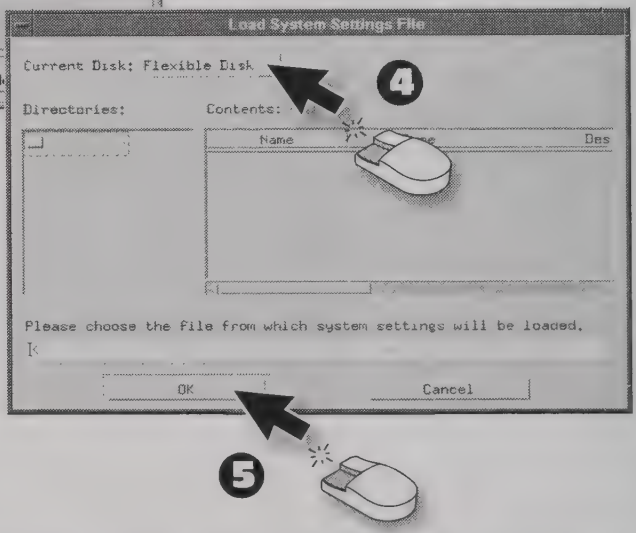
Saving System Settings

By saving your system settings to a flexible disk or a mounted directory, you create a backup file that can be used to quickly setup systems, or restore current system settings after the Disaster Recovery procedure.







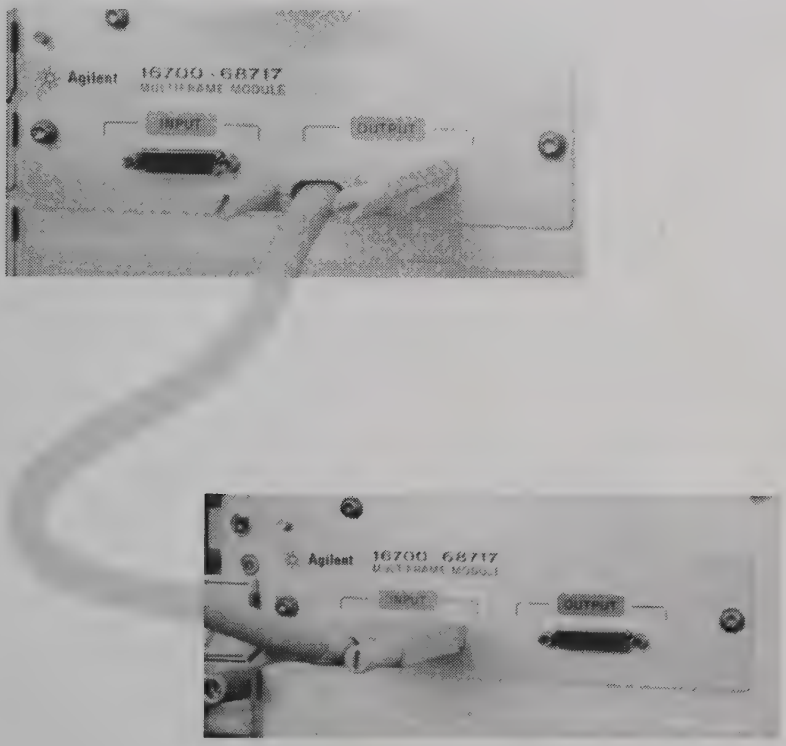


If an item is not valid, or was not initially saved to the file, the selection will be greyed out in the interface. Also, if no file extension is added, a "set" extension is automatically added for you.

As many as eight 16700B's and/or 16702B's with Agilent 16700-68717 multiframe modules installed may be connected together.

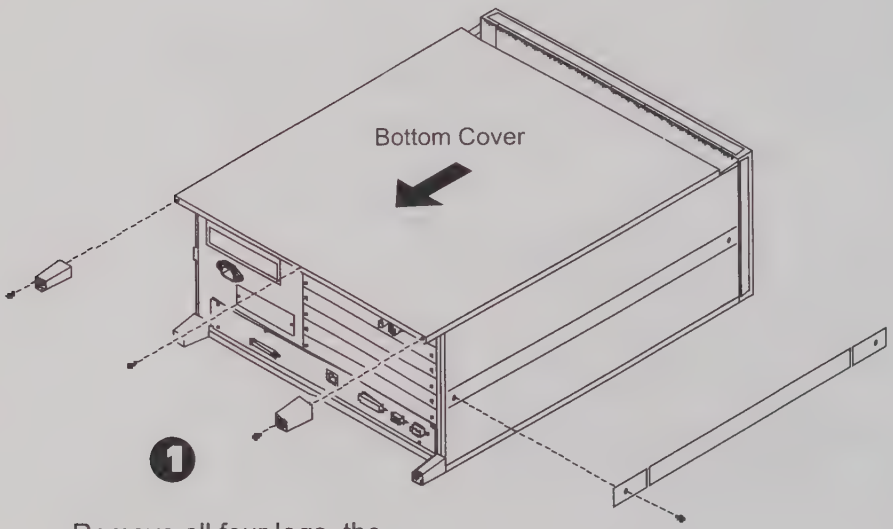
The frame at the beginning of the series must have its **INPUT** port open and the last frame in the series must have its **OUTPUT** port open.

Multiframe requires software Rev. A.02.00.00 or higher. Agilent 16700B and 16702B logic analysis systems ordered with the multiframe option installed will have the current operating system software installed.

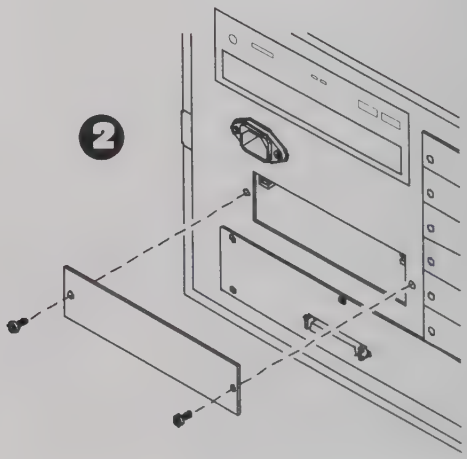


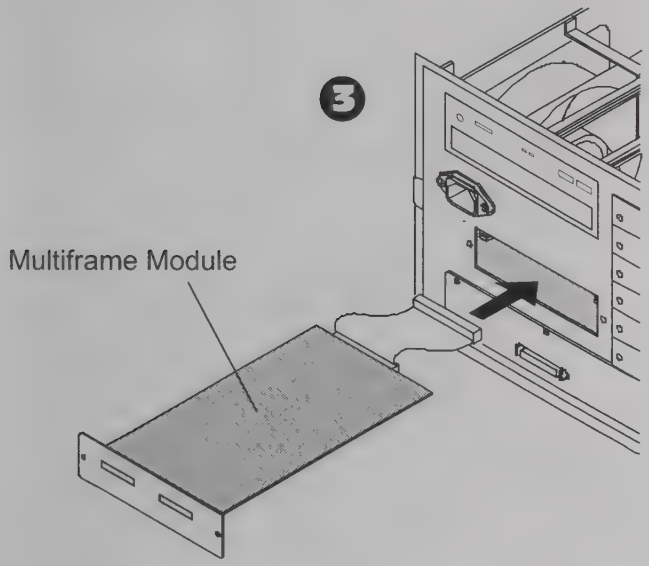
Install the Multiframe Modules into 16700B or 16702B frames.

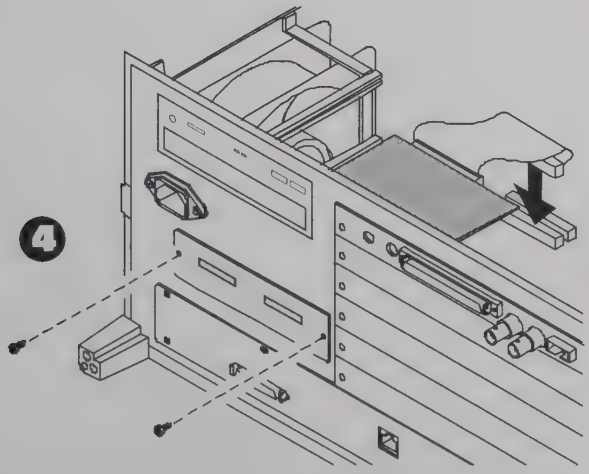
CAUTION Be sure to unplug the power cable before beginning this procedure.



Remove all four legs, the bottom cover, and the handle.



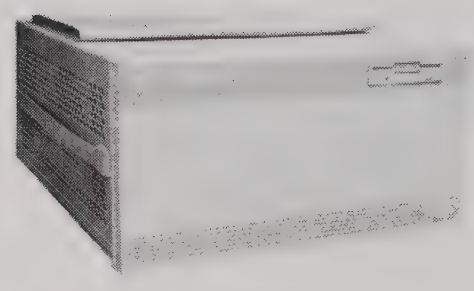

3
Multiframe Module

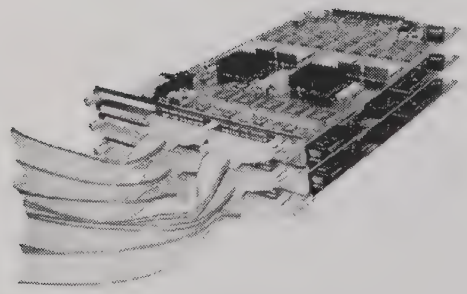

4

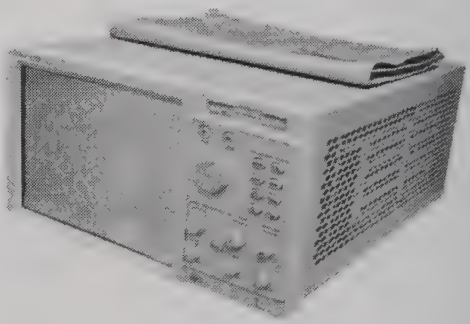
Instrument Cabinet and Module Front Panels

CAUTION

With the instrument unplugged, use mild soap and water to clean the cabinet of the instrument or the front of the modules. Harsh soap might damage the water-based paint. ***Do not immerse the instrument or modules in water.***

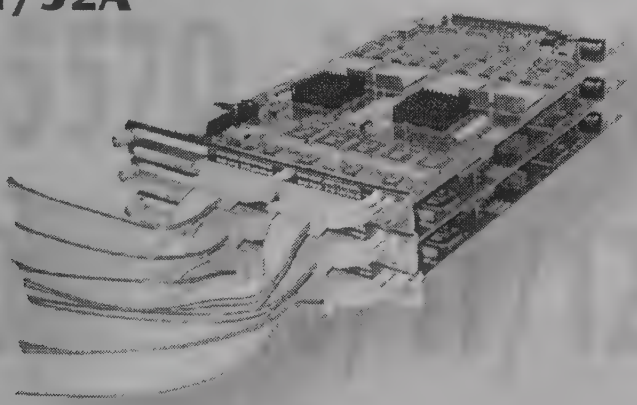






Measurement Modules

16517/18A
16522A
16533/34A
16557D
16710/11/12A
16715/16/17A
16720A
16750/51/52A
16760A



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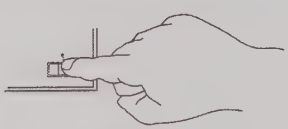
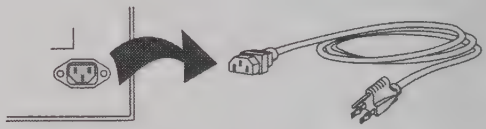
for 16700A/B
16701A/B
16702A/B

General Installation

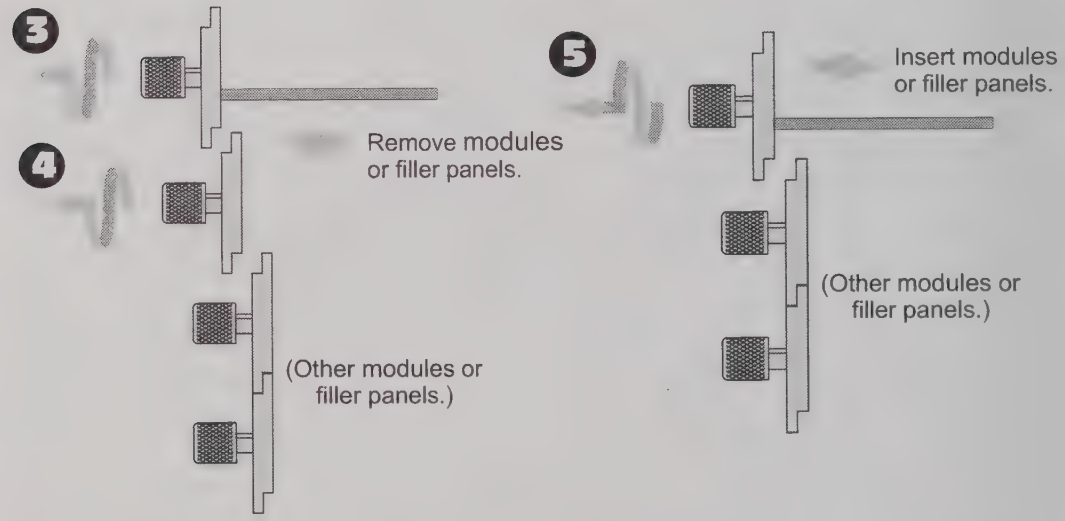
CAUTION Be sure the frame is unplugged before removing or installing modules.



1. Power down the system.



2. Disconnect the power cable.



CAUTION

Use a grounded wrist strap and mat when handling the modules. Gently apply pressure to the center of the module or filler panel while tightening the thumb screws. Use filler panels in empty slots for proper cooling.

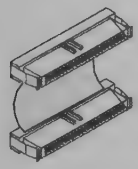
Carefully slide the module into the frame and hand tighten the thumb screws. *If you are inserting more than one module, the tightening order is bottom module to top module.*

A single-module configuration can be installed in any available slot.

Note!

Some modules require calibration if they are moved to a different slot. For calibration information, refer to the online help for the individual modules.

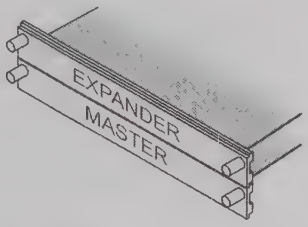
2-Card Module

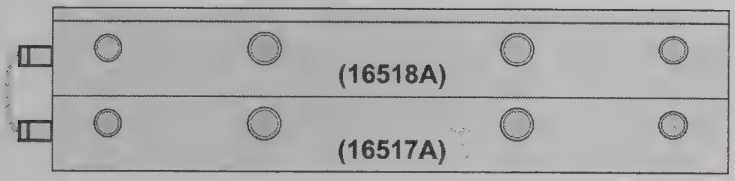


Expander

Master

2 Connector Cable

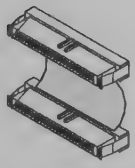




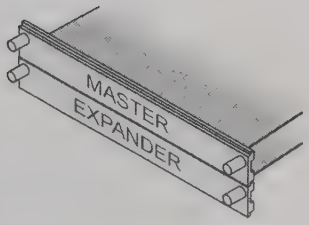
OR

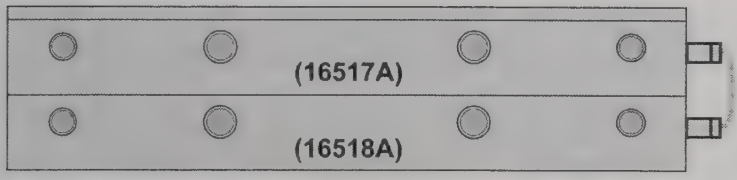
Master

Expander

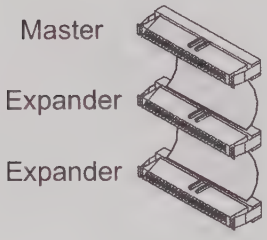


2 Connector Cable

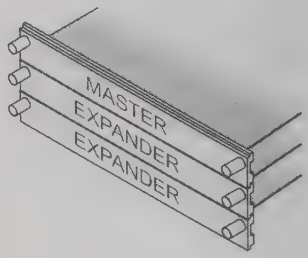


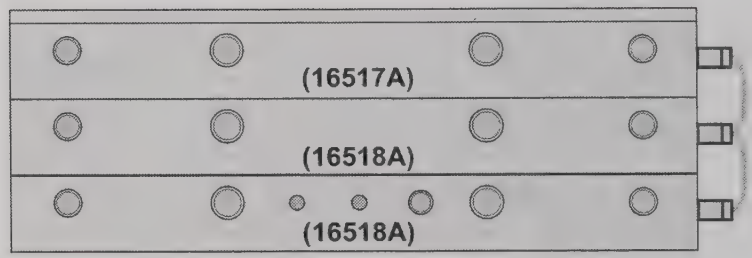


3-Card Module

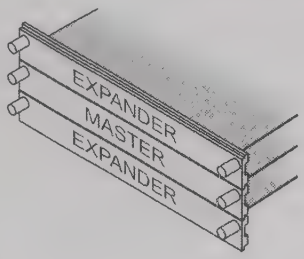


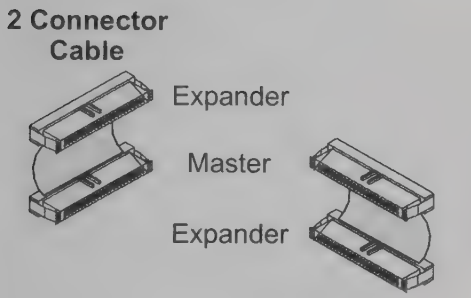
3 Connector Cable

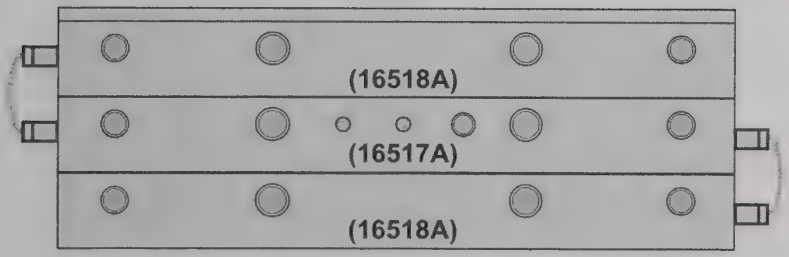




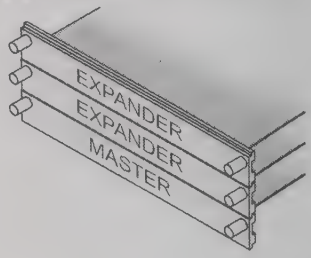
3-Card Module

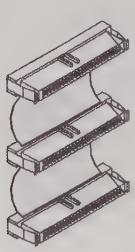






3-Card Module



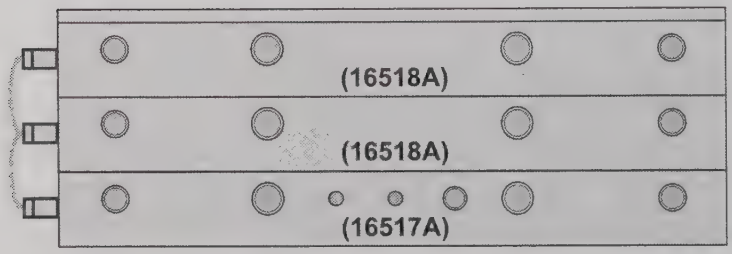


Expander

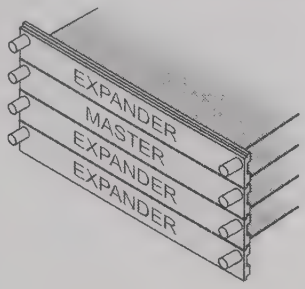
Expander

Master

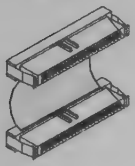
3 Connector Cable



4-Card Module



2 Connector Cable

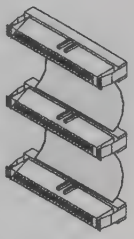


Expander

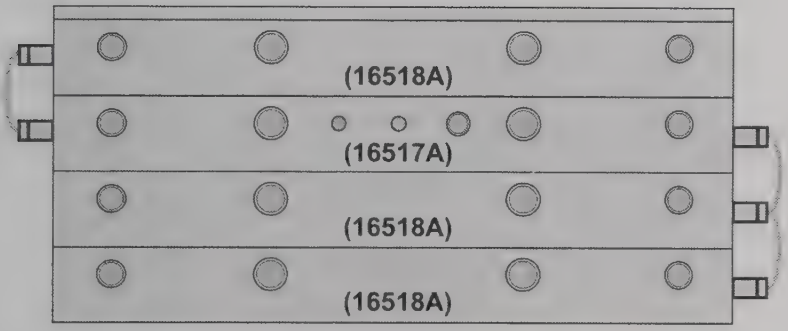
Master

Expander

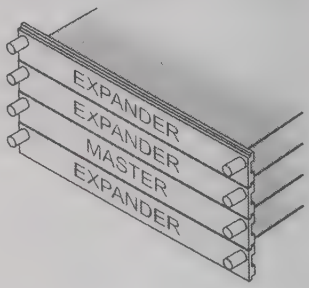
Expander

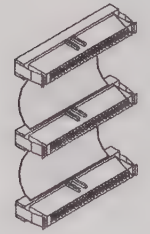


3 Connector Cable



4-Card Module





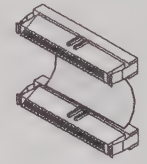
Expander

Expander

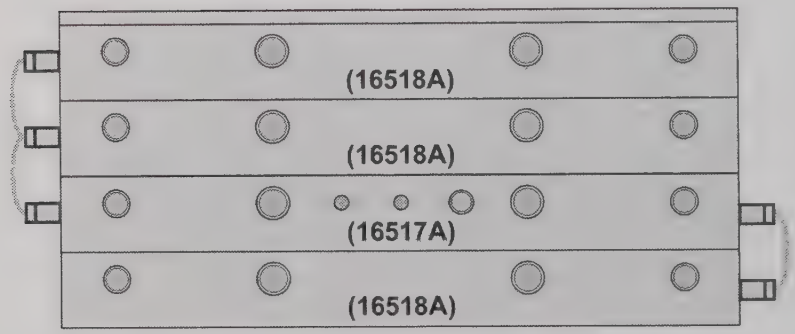
Master

Expander

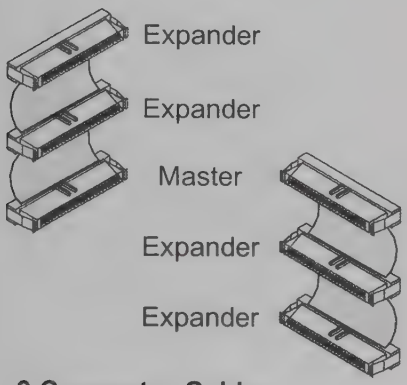
3 Connector Cable

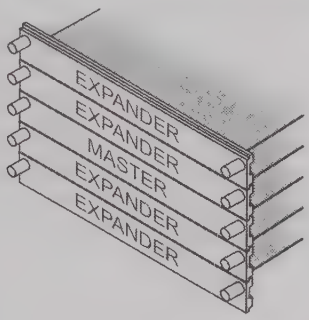


2 Connector Cable

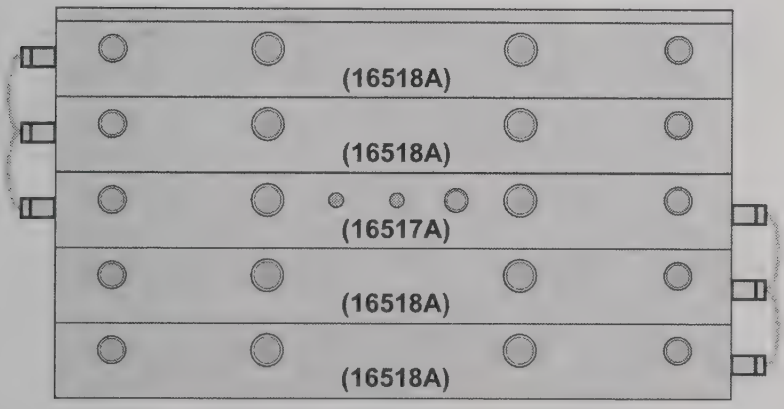


5-Card Module





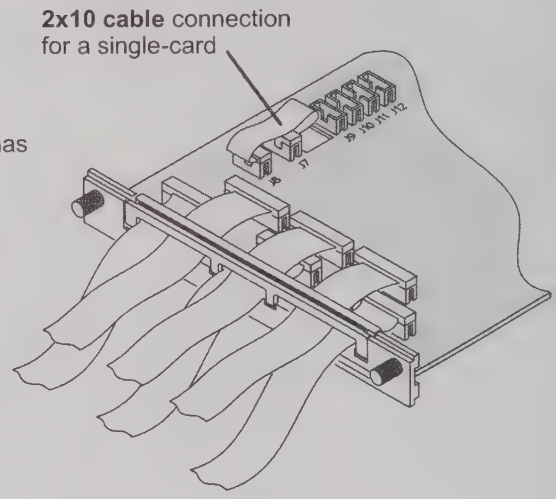
3 Connector Cables
(Need 2)

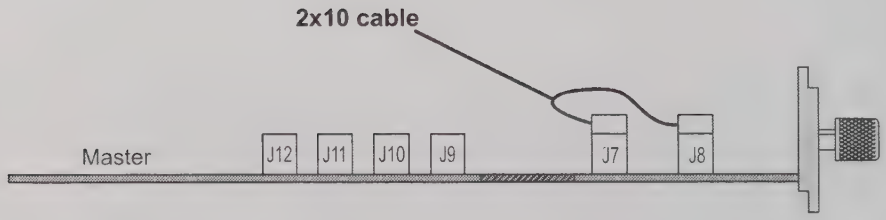


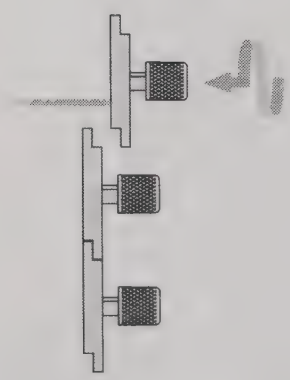
16517/18
Done

Single-Card Module

Each 16522A shipped stand alone has the **2x10 cable** connected in the single-card module configuration.





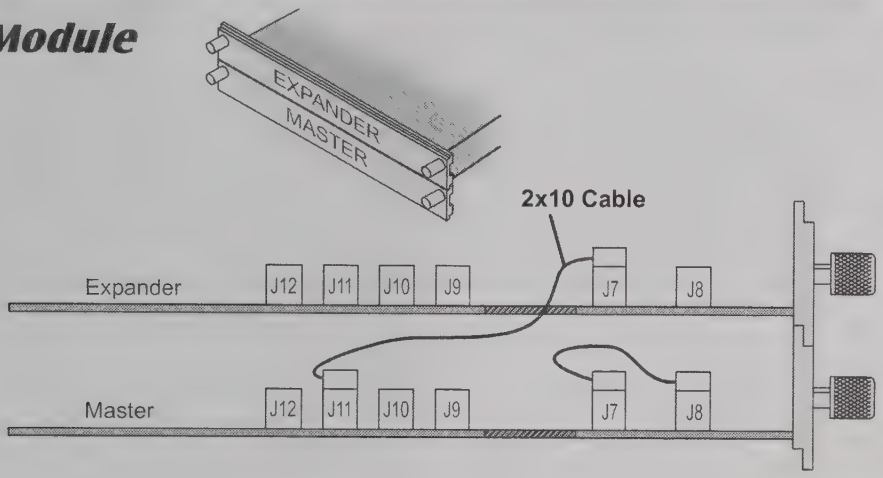


A single-card module configuration can be installed in any available slot.

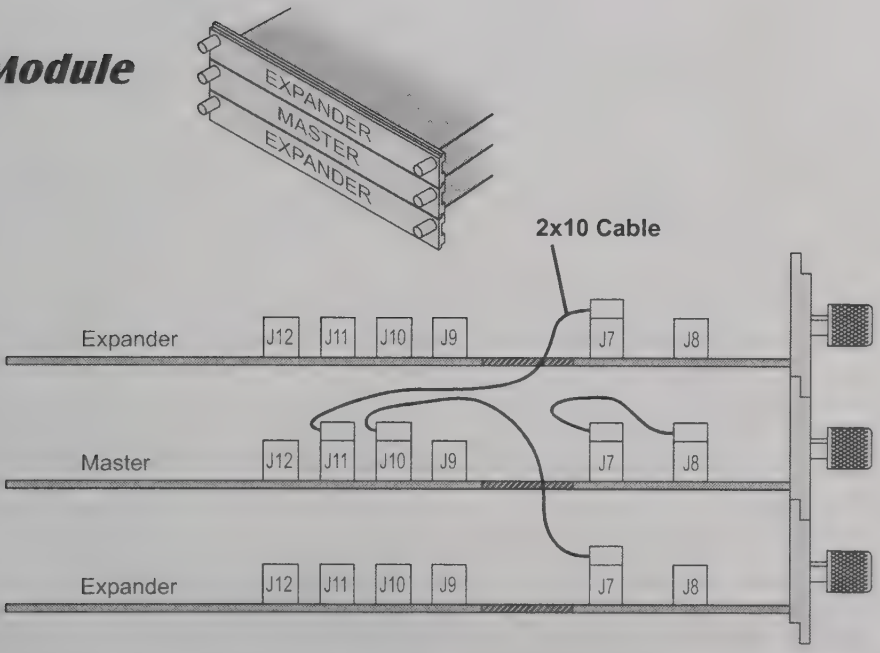
CAUTION Be sure the frame is unplugged before removing or installing modules.

The following pages will show you how to connect the **2x10 cables** to configure two, three, four, and five-card modules.

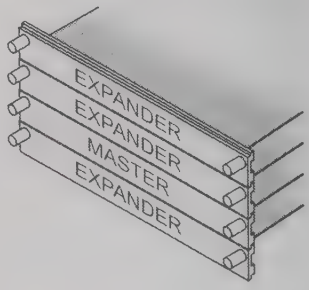
2-Card Module



3-Card Module



4-Card Module



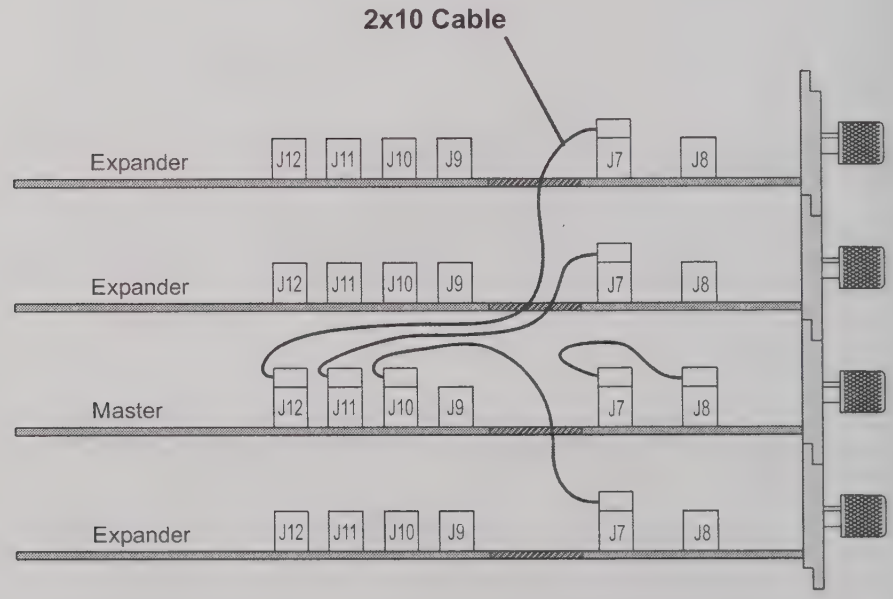
Note!

Carefully slide the four cards half way into the mainframe slots.

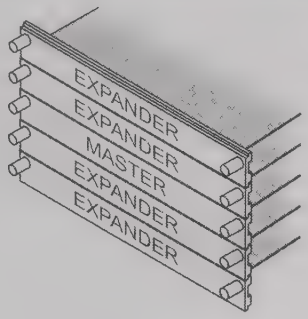
Cable the bottom Expander to the Master Card first.

Cable the upper two Expanders to the Master Card.

Gently slide the cabled assembly fully into the frame and tighten.



5-Card Module



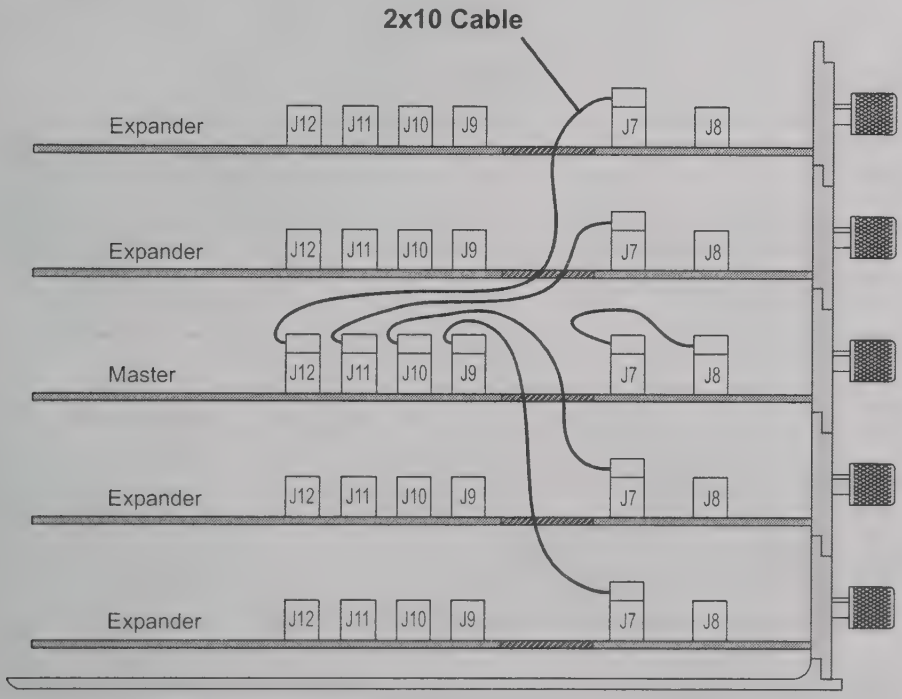
Note!

Carefully slide the five cards half way into the mainframe slots.

Cable the bottom two Expanders to the Master first.

Cable the upper two Expanders to the Master.

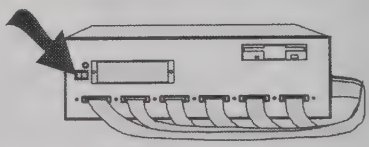
Gently slide the cabled assembly fully into the frame and tighten.



16522A

Done

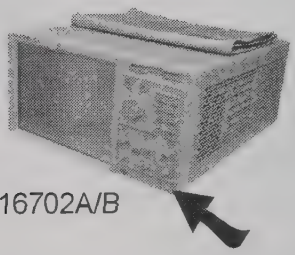
Single-Card Module



16600A Series

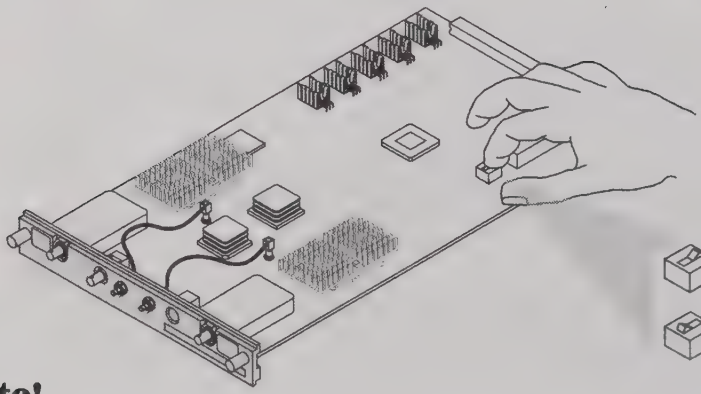
1. Power down the mainframe.

16700A/B



16702A/B

2. Remove the module from the mainframe and set the PROTECTED / UNPROTECTED switch to UNPROTECTED.



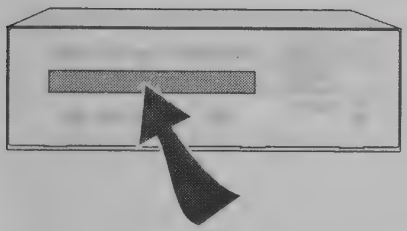
UNPROTECTED

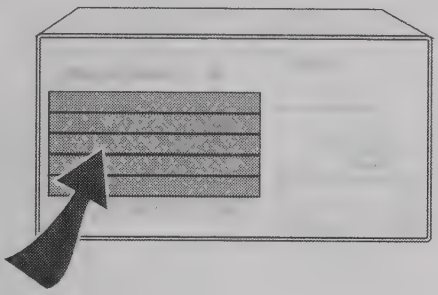
PROTECTED

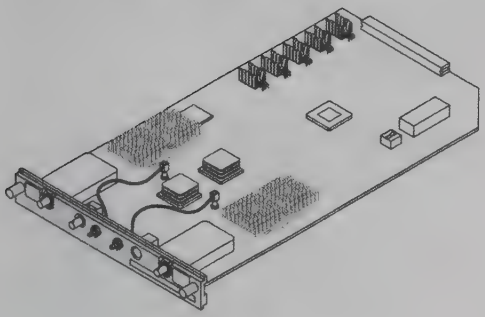
Note!

If you calibrate this module without unprotecting the memory, the new calibration settings will not be saved when the system is shut down. The system will default to the previous settings. The new calibration settings would be effective for the current active session only.

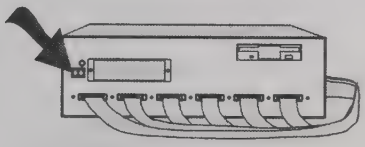
Single-Card Module



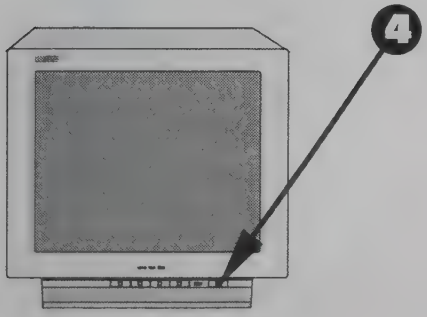




3 Reinstall the 16533A/34A module into the mainframe and reconnect the power cable.

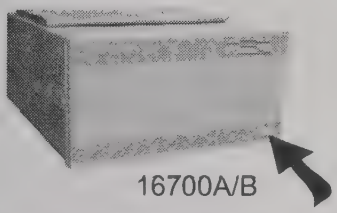


16600A Series

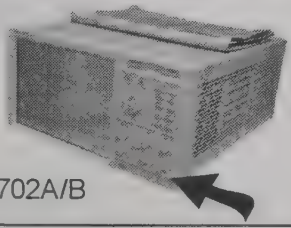


4 Monitor power ON. (If applicable)

5 System power ON



16700A/B

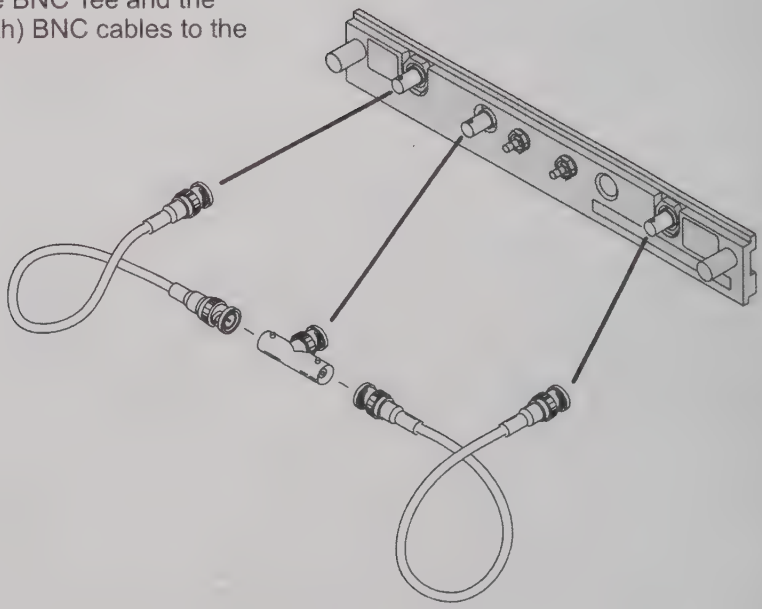


16702A/B

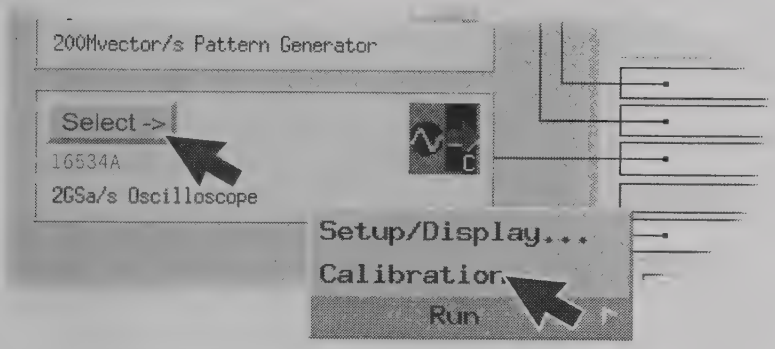
Single-Card Module

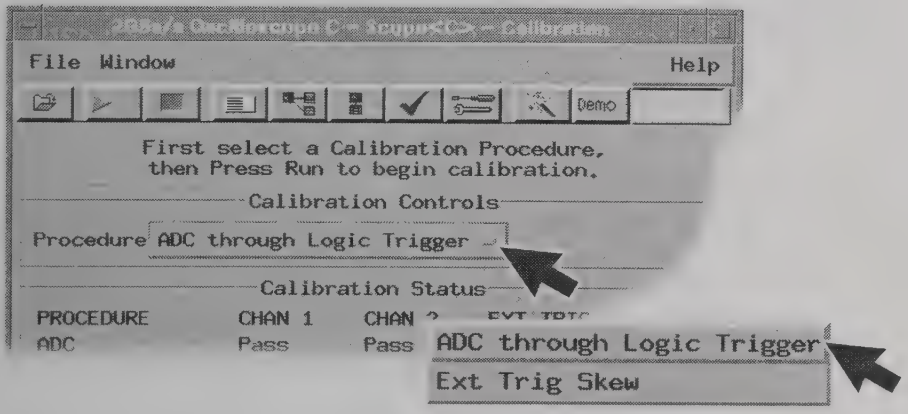
6 For more accurate calibration, allow the system 30 minutes to warm up.

7 Connect the BNC Tee and the (equal length) BNC cables to the module.

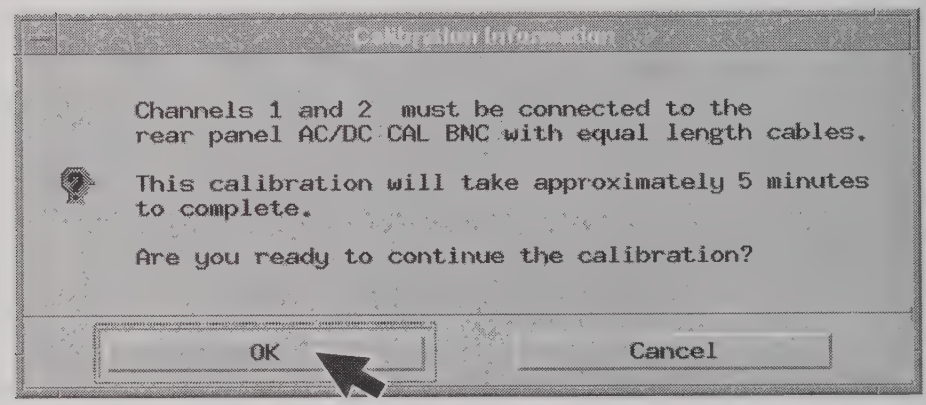


Single-Card Module



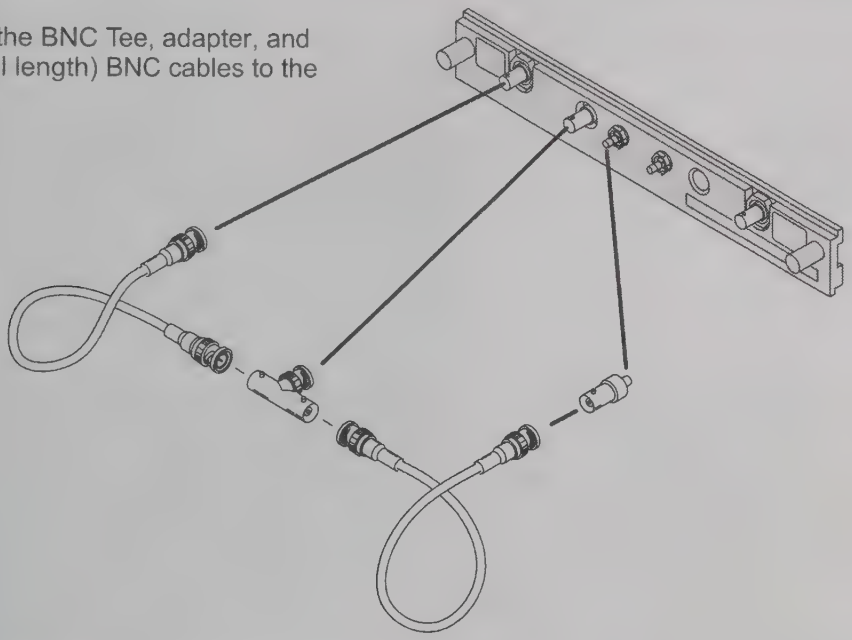


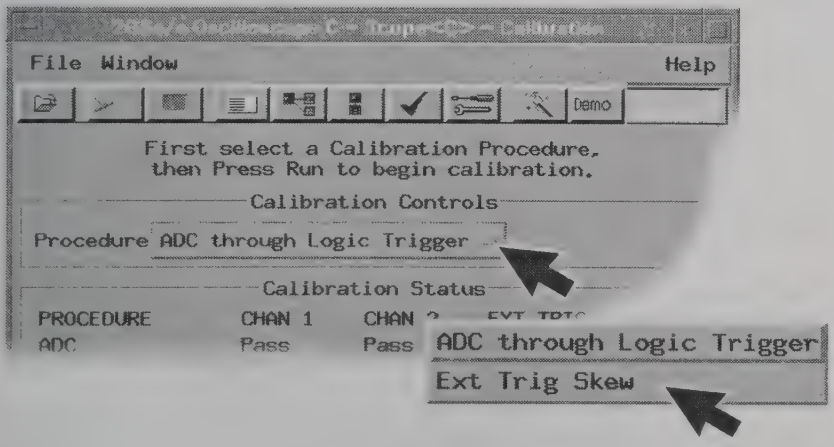
Single-Card Module


Channels 1 and 2 must be connected to the
rear panel AC/DC CAL BNC with equal length cables.
This calibration will take approximately 5 minutes
to complete.
Are you ready to continue the calibration?
OK
Cancel

Single-Card Module

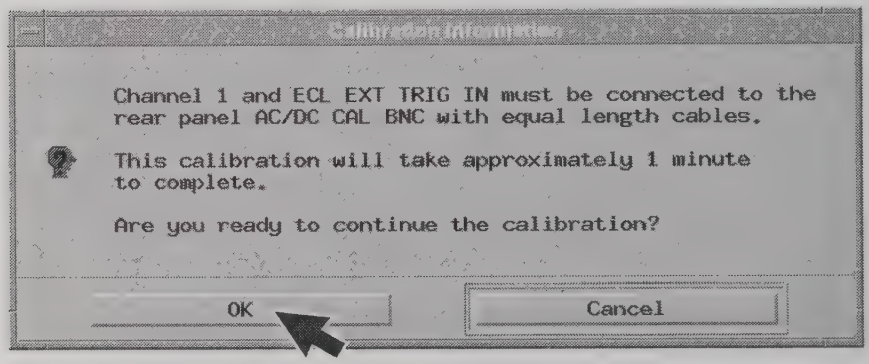
Connect the BNC Tee, adapter, and the (equal length) BNC cables to the module.





Single-Card Module

RUN


Channel 1 and ECL EXT TRIG IN must be connected to the rear panel AC/DC CAL BNC with equal length cables.
This calibration will take approximately 1 minute to complete.
Are you ready to continue the calibration?
OK
Cancel

Note!

Remember to set the PROTECTED/UNPROTECTED switch back to PROTECTED.

If you just calibrated this card as one of a multi-card set, you must leave the PROTECTED/UNPROTECTED switch in the UNPROTECTED position until you have completed the multi-card calibration procedure on the following pages.

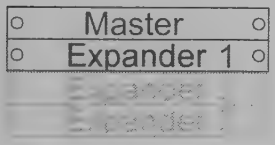
Single Module Calibration Done

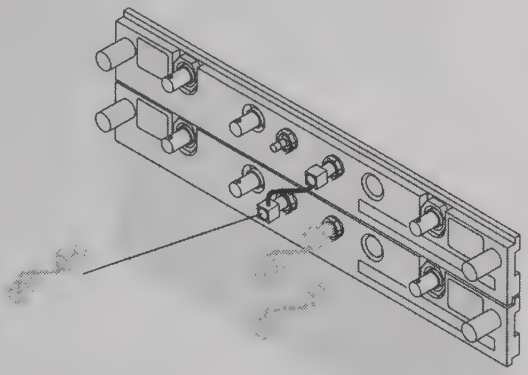
Multi-Card Module

Note!

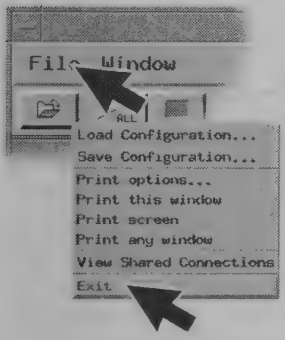
Each of the individual boards of a multi-card module must first be calibrated as a single. (See previous pages: *16533/34A Single-Card Module.*)

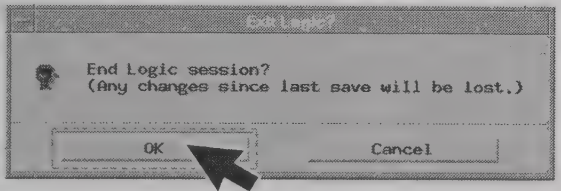
The following example is of a two board arrangement. Up to four cards may be configured in a 16700A, 16700B, 16702A, or 16702B mainframe.

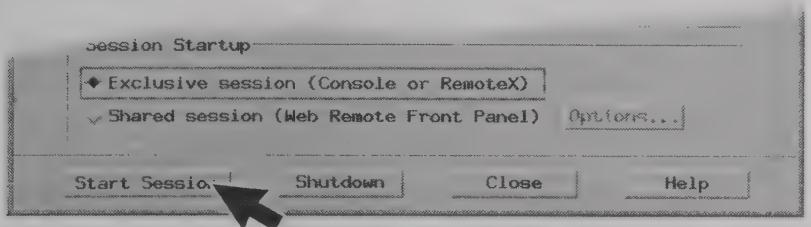




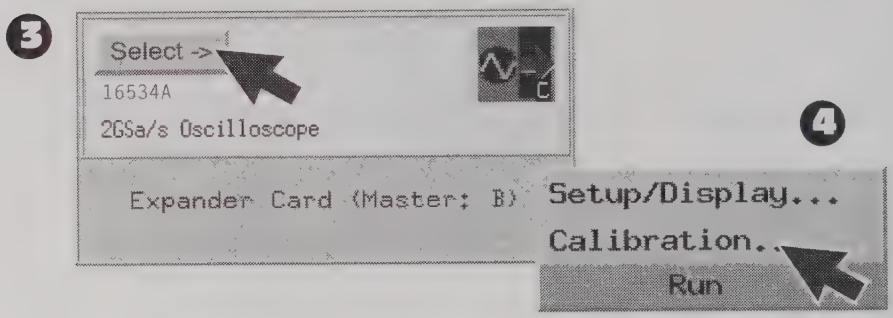
1. Connect the module cables.
2. Exit the current session and restart.





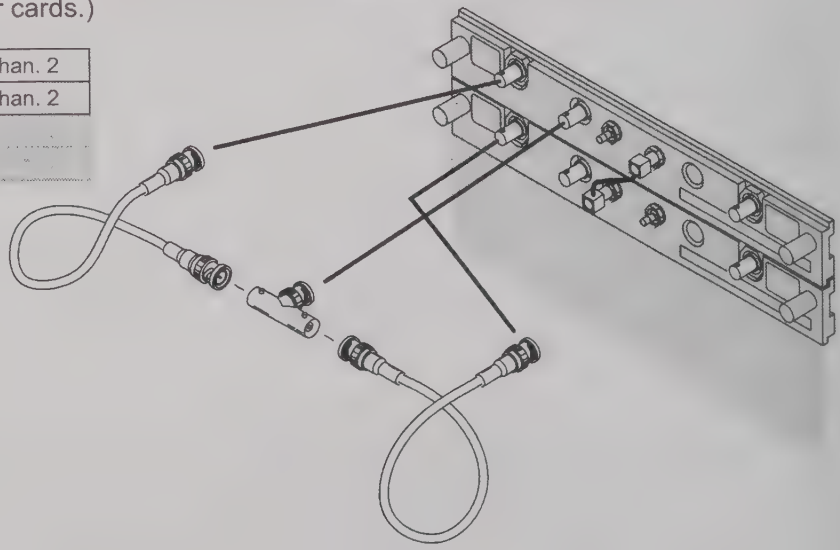


Multi-Card Module



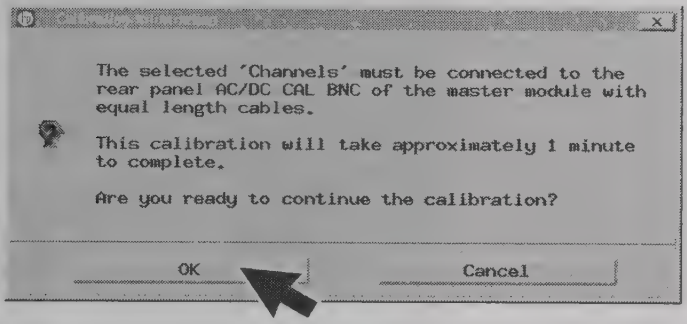
5 Connect the (equal length) BNC calibration between channel 1, AC/DC cal, and channel 1 of the second card. (Channel 1 of the third card next time etc. up to four cards.)

Chan. 1	Chan. 2
Chan. 1	Chan. 2

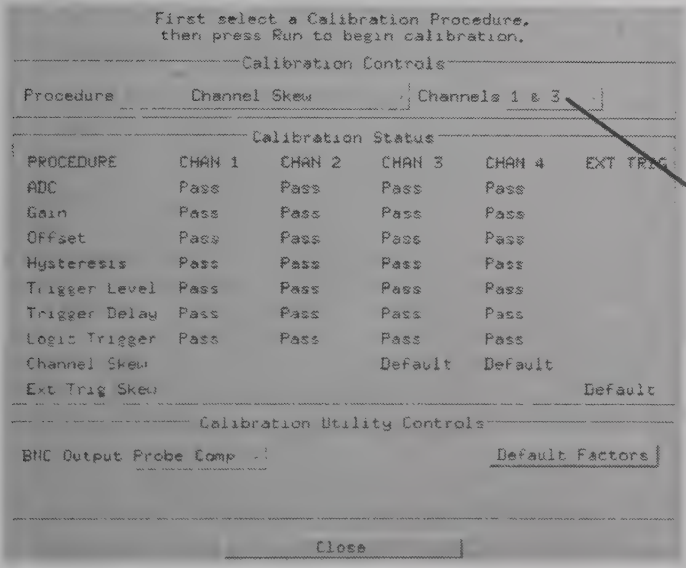


Multi-Card Module

6 RUN


The selected 'Channels' must be connected to the rear panel AC/DC CAL BNC of the master module with equal length cables.
This calibration will take approximately 1 minute to complete.
Are you ready to continue the calibration?
OK
Cancel

7


First select a Calibration Procedure, then press Run to begin calibration.
Calibration Controls
Procedure
Channel Skew
Channels 1 & 3
Calibration Status
PROCEDURE CHAN 1 CHAN 2 CHAN 3 CHAN 4 EXT TRIG
ADC Pass Pass Pass Pass
Gain Pass Pass Pass Pass
Offset Pass Pass Pass Pass
Hysteresis Pass Pass Pass Pass
Trigger Level Pass Pass Pass Pass
Trigger Delay Pass Pass Pass Pass
Logic Trigger Pass Pass Pass Pass
Channel Skew Default Default
Ext Trig Skew Default
Calibration Utility Controls
BNC Output Probe Comp
Default Factors
Close

Note!

Repeat steps 3 through 7 for each additional card in your multi-card module.

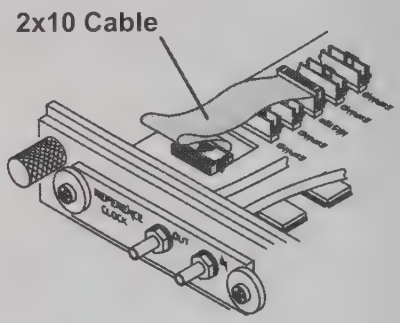
Select the appropriate combination for each additional card.

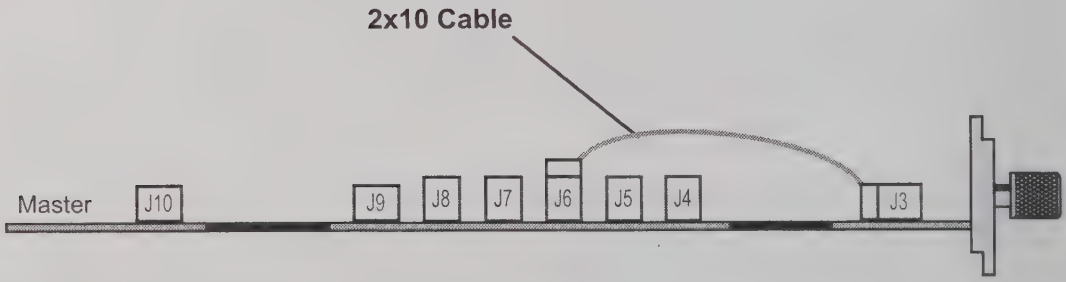
Remember to set the PROTECTED/UNPROTECTED switch back to PROTECTED.

Multi-Module Calibration **Done**

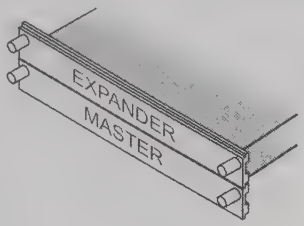
Single-Card Module

When ordered as a single card, the 16557D is shipped with the **2x10 cable** factory configured as a single card module.



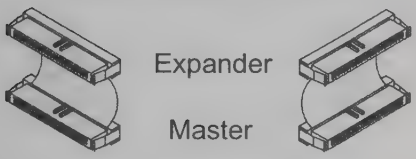


2-Card Module



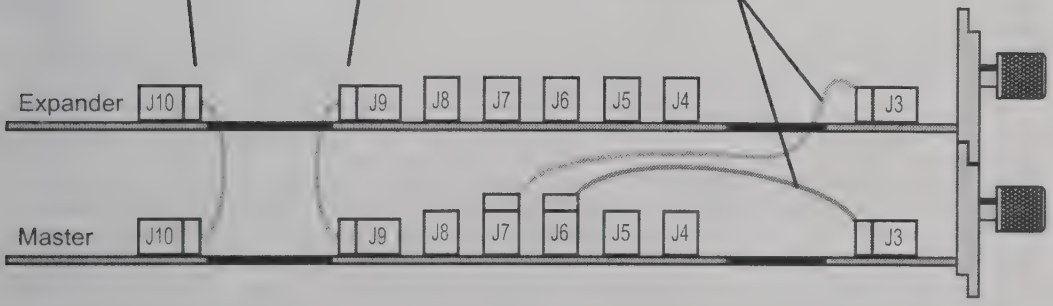
Find the required two connector **2x25 cables** and connect the cables as shown.

2x25 Cables (Need 2)

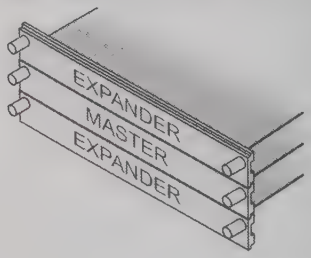


Connect the **2x10 cables** on the Expander to the Master.

2x10 Cables

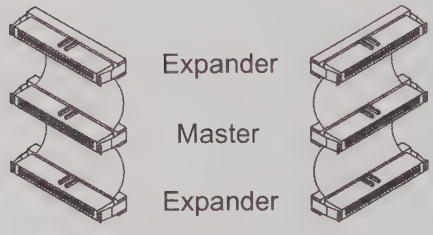


3-Card Module



Find the required three connector **2x25 cables** and connect the cables as shown.

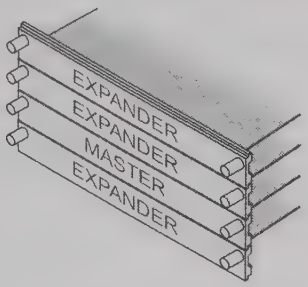
2x25 Cables (Need 2)



Connect the **2x10 cables** on the Expanders to the Master.

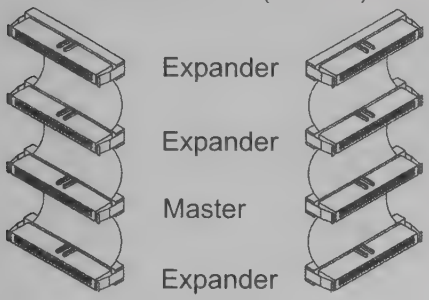
2x10 Cables

4-Card Module

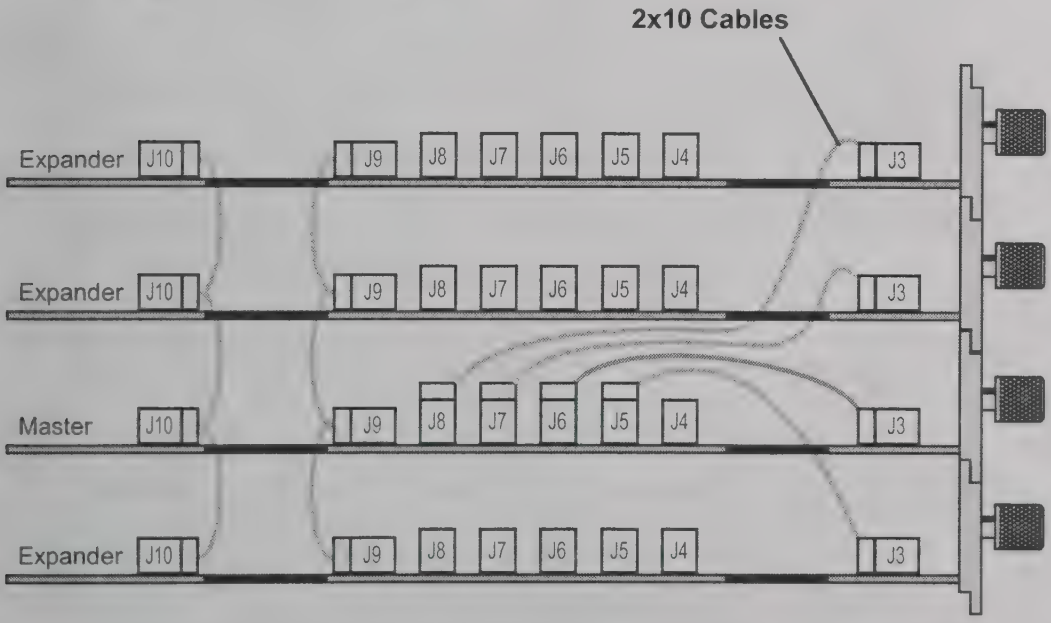


Find the required four connector **2x25 cables** and connect the cables as shown.

2x25 Cables (Need 2)

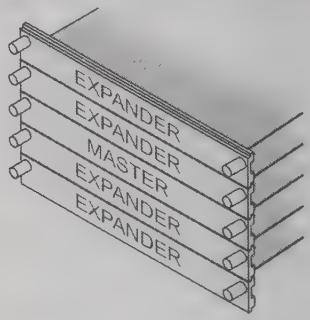


Connect the **2x10 cables** on the Expanders to the Master.

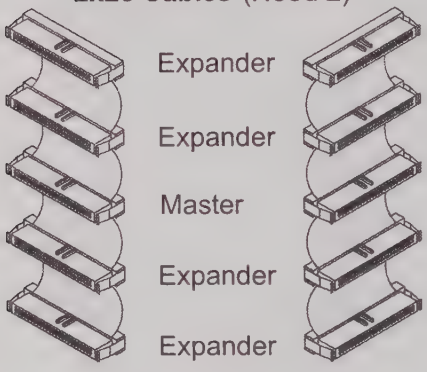


5-Card Module

Find the required five connector **2x25 cables** and connect the cables as shown.

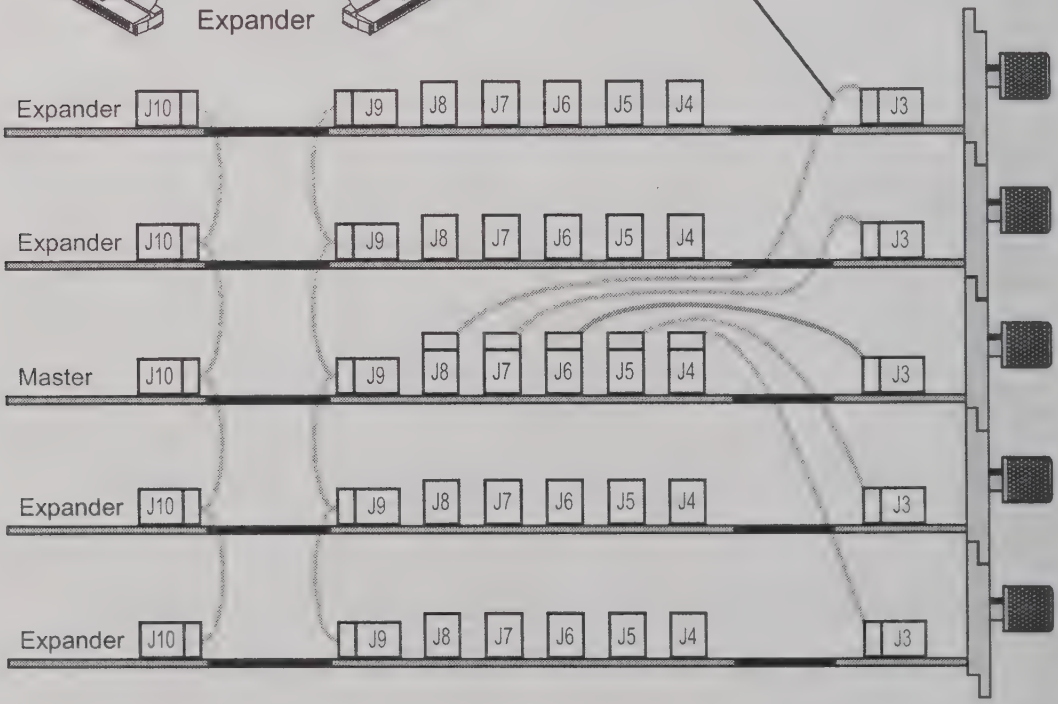


2x25 Cables (Need 2)



Connect the **2x10 cables** on the Expanders to the Master.

2x10 Cables

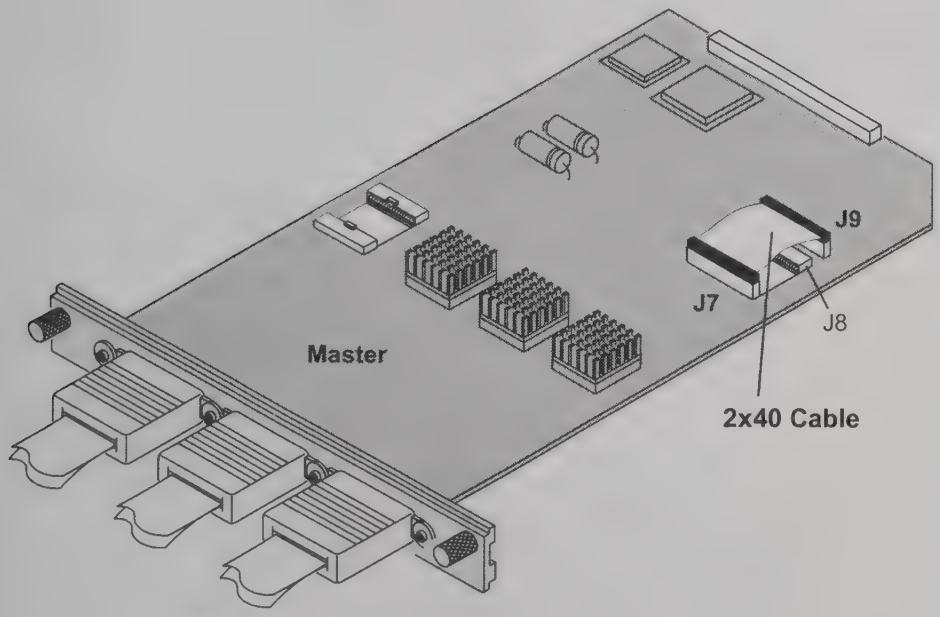

Expander J10 J9 J8 J7 J6 J5 J4 J3
Expander J10 J9 J8 J7 J6 J5 J4 J3
Master J10 J9 J8 J7 J6 J5 J4 J3
Expander J10 J9 J8 J7 J6 J5 J4 J3
Expander J10 J9 J8 J7 J6 J5 J4 J3

Single-Card Module

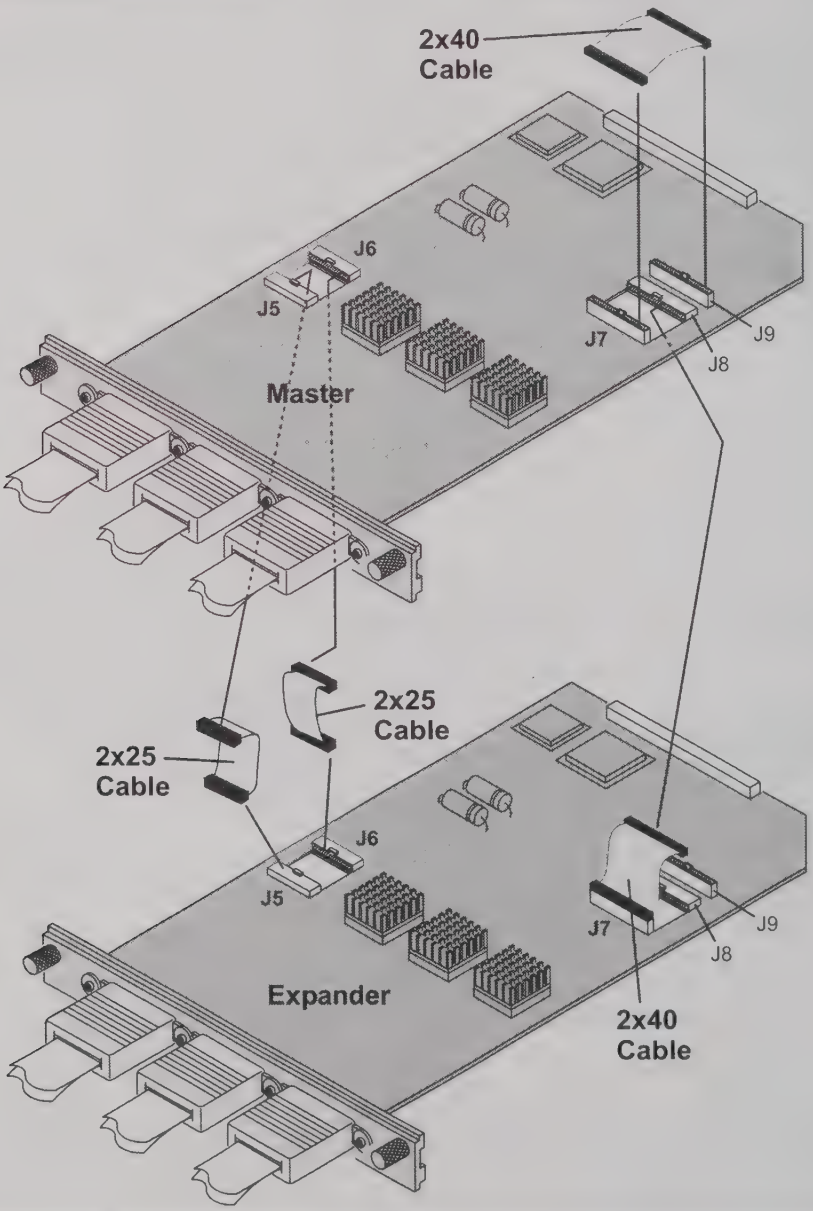
Note!

The 16700A, 16700B, 16702A and 16702B require Rev. A.01.20.00 or higher. See the Software Installation chapter in the book. Select 1660X-70XA.

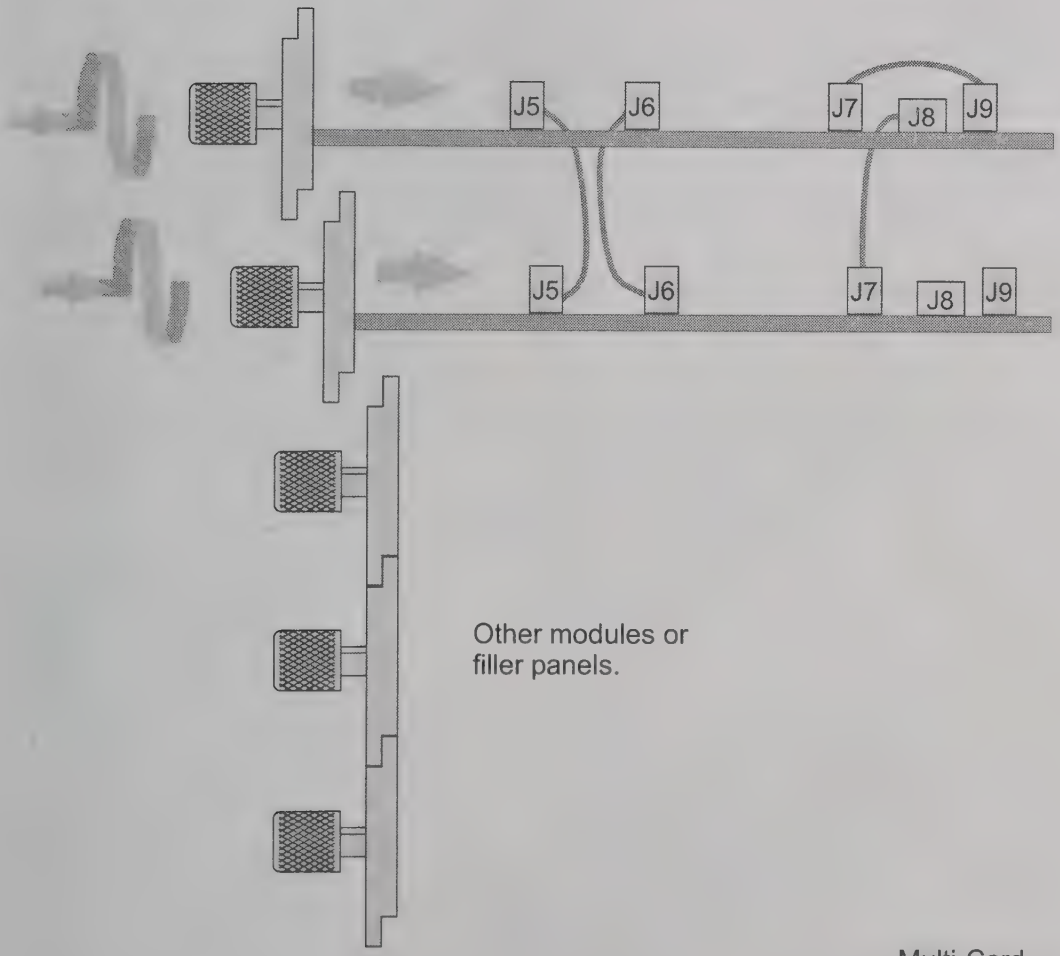
A single 16710A, 16711A, and 16712A will have the **2x40** cable connected in the single-card configuration.



Multi-Card Module



Multi-Card Module



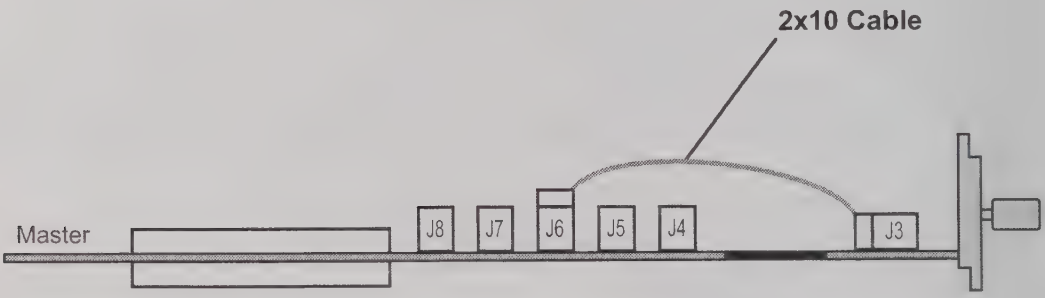
Multi-Card Module

Done

Single-Card Module

Note!

A single 16715/ 16/ 17/ 18/ 19A or 16750/ 51/ 52A will have the **2x40** cable connected in the single-card configuration.



Note!

The 16715/ 16/ 17A's require software Rev. A.01.40.00 or higher.

The 16718/ 19A's require software Rev. A.01.50.00 or higher.

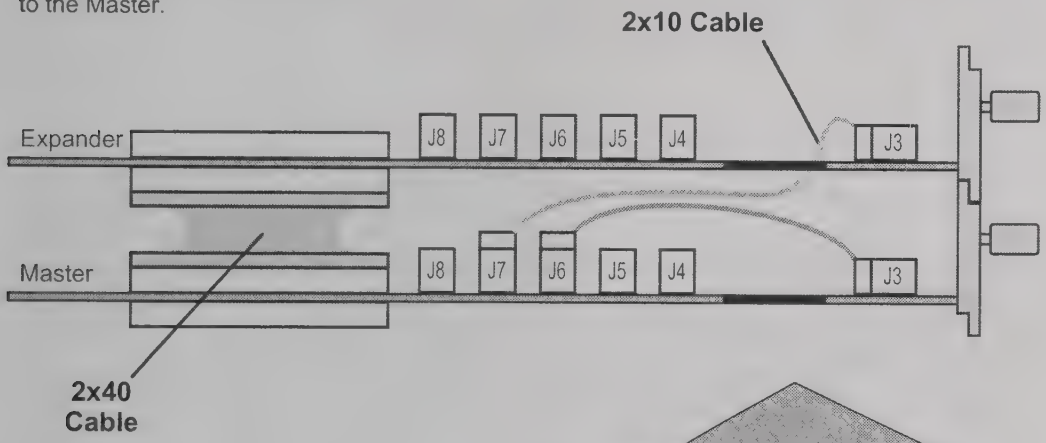
The 16750/ 51/ 52A require software Rev. A.02.00.00 or higher.

The 16760's require software Rev. A.02.20.00 or higher.

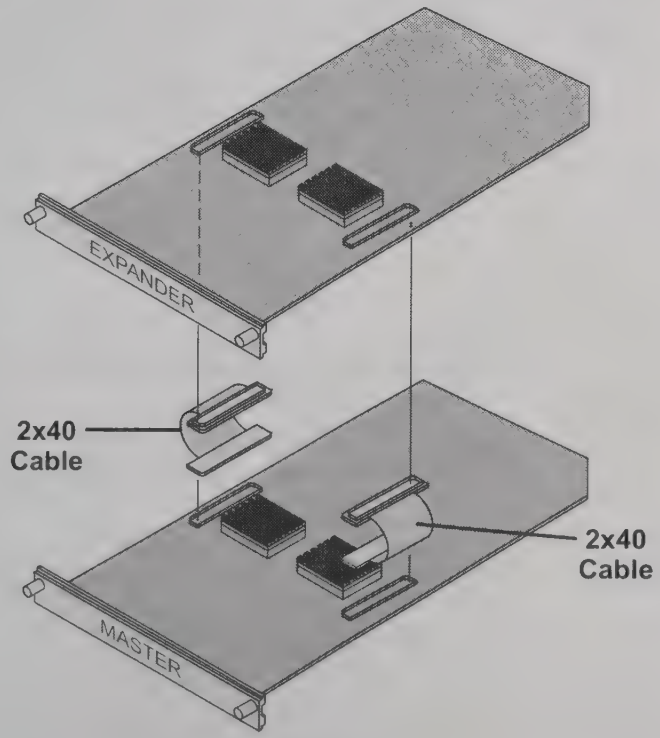
See the Software Installation chapter in this book.

2-Card Module

Connect the **2x10 cable** of the Expander to the Master.

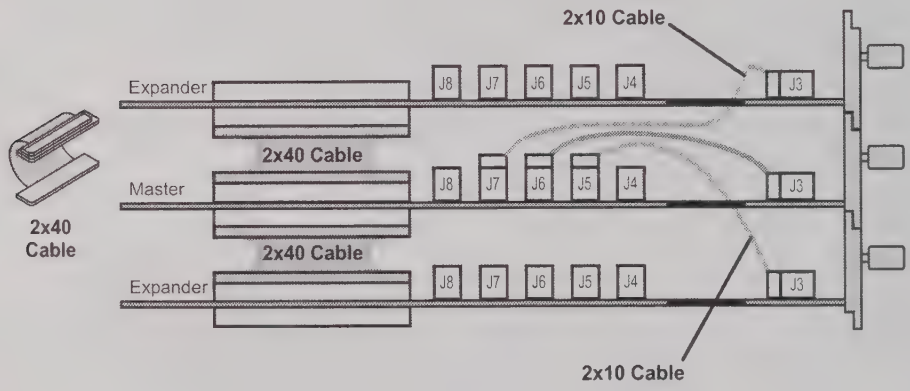


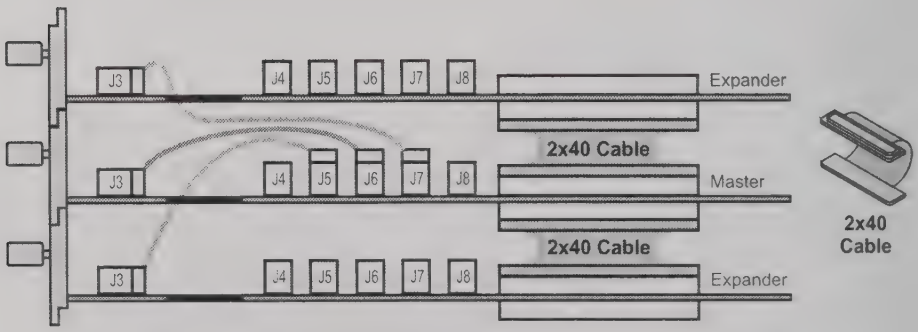
Open the accessory pouch and find two of the required **2x40 cables**. Connect the **2x40 cables** on the modules as shown.



3-Card Module

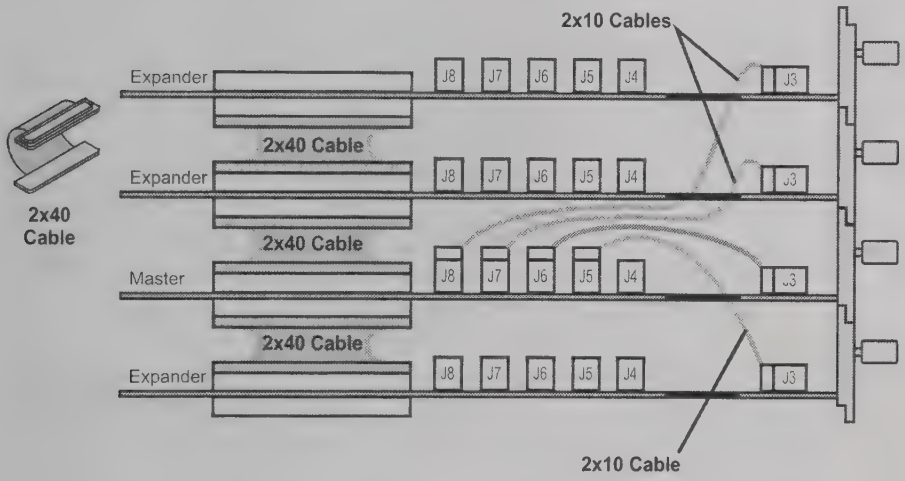
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.

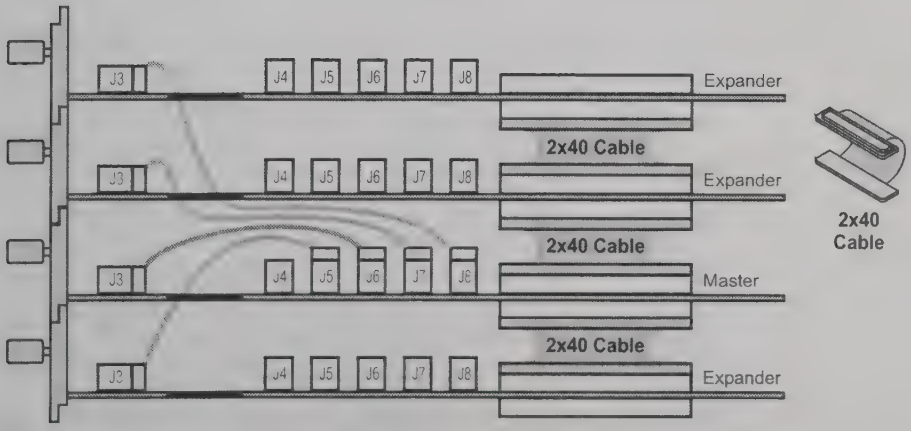




4-Card Module

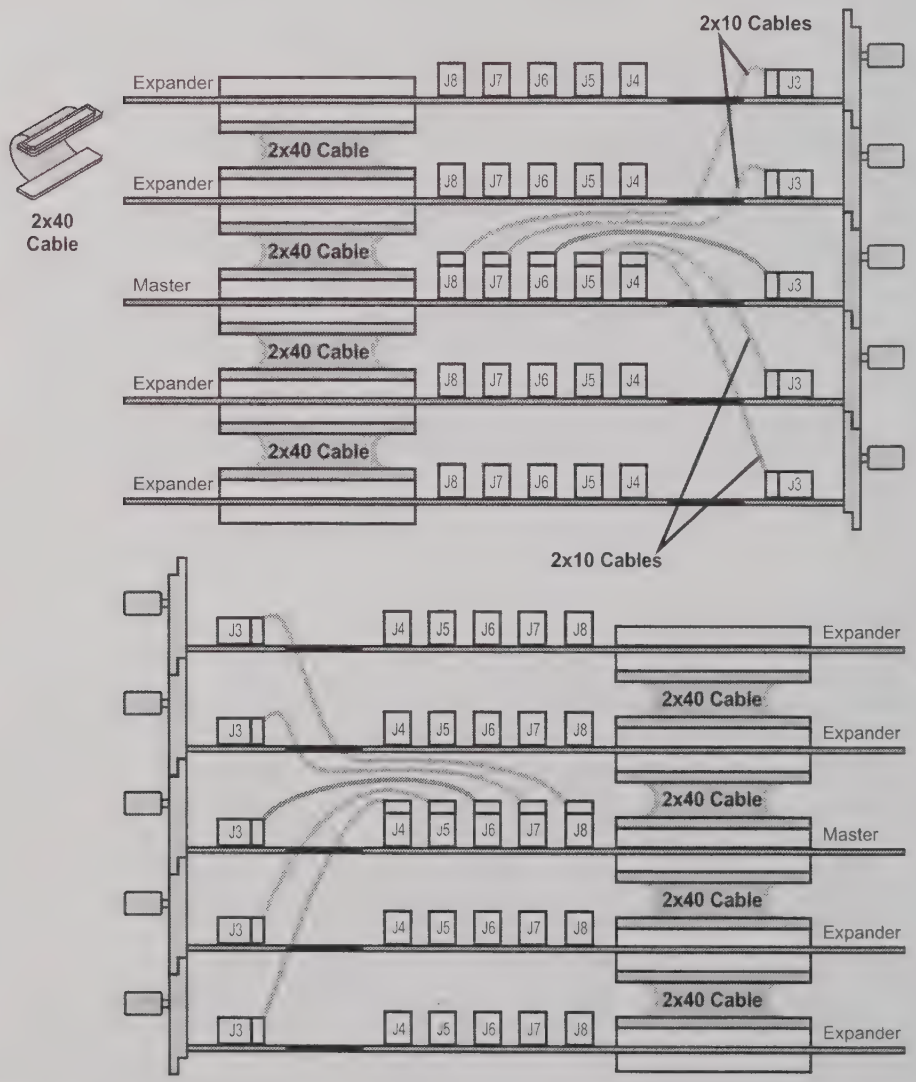
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.





5-Card Module

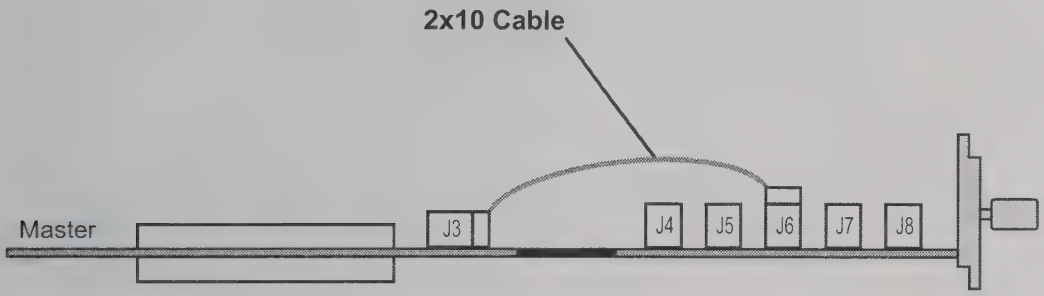
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.



Single-Card Module

Note!

A single 16760A will have the **2x40** cable connected in the single-card configuration.



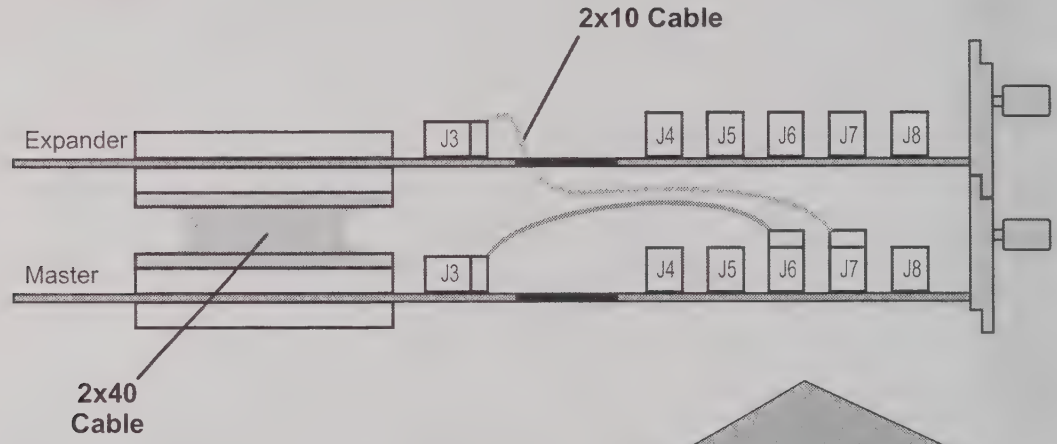
Note!

The 16760's require software Rev. A.02.20.00 or higher.

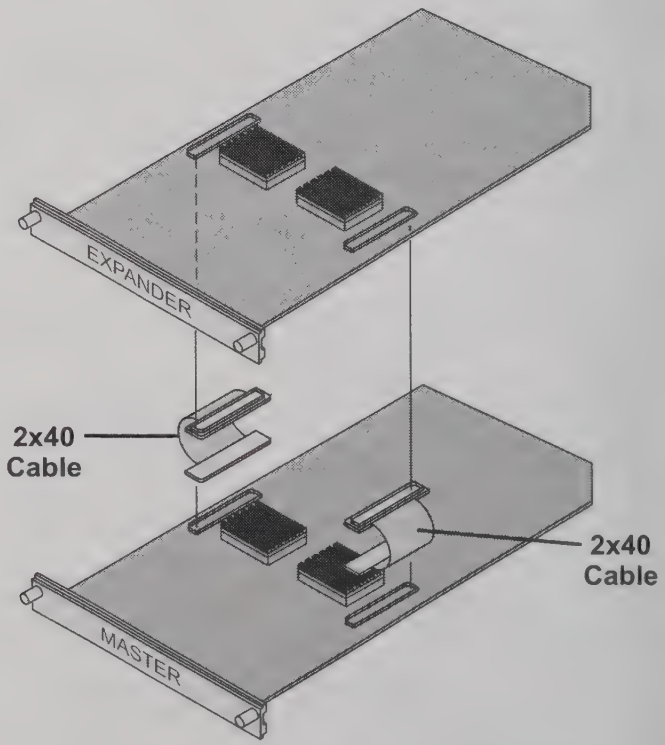
See the Software Installation chapter in this book.

2-Card Module

Connect the **2x10 cable** of the Expander to the Master.

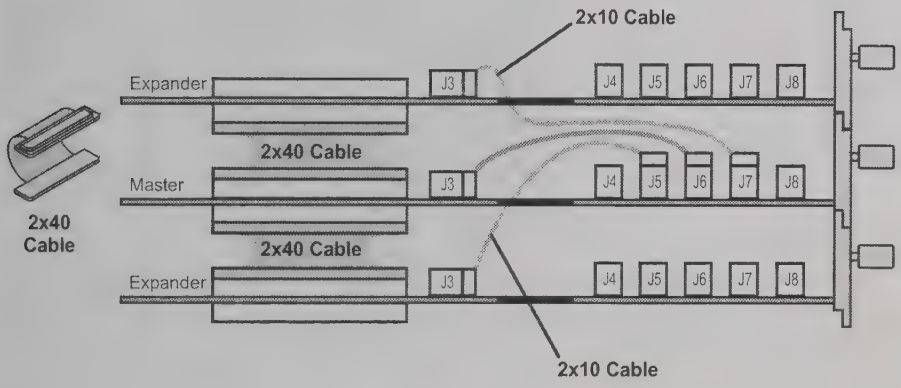


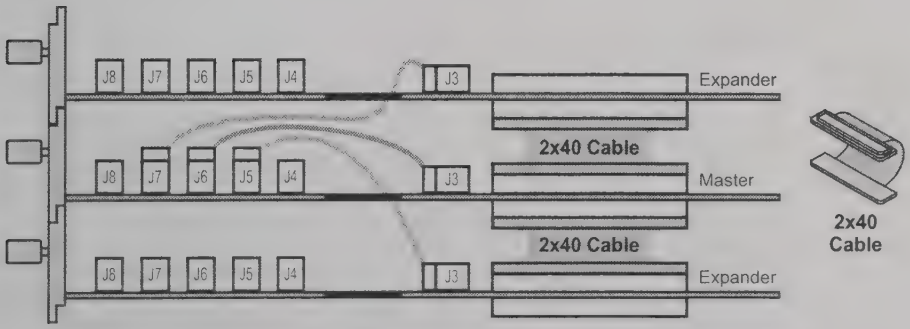
Open the accessory pouch and find two of the required **2x40 cables**. Connect the **2x40 cables** on the modules as shown.



3-Card Module

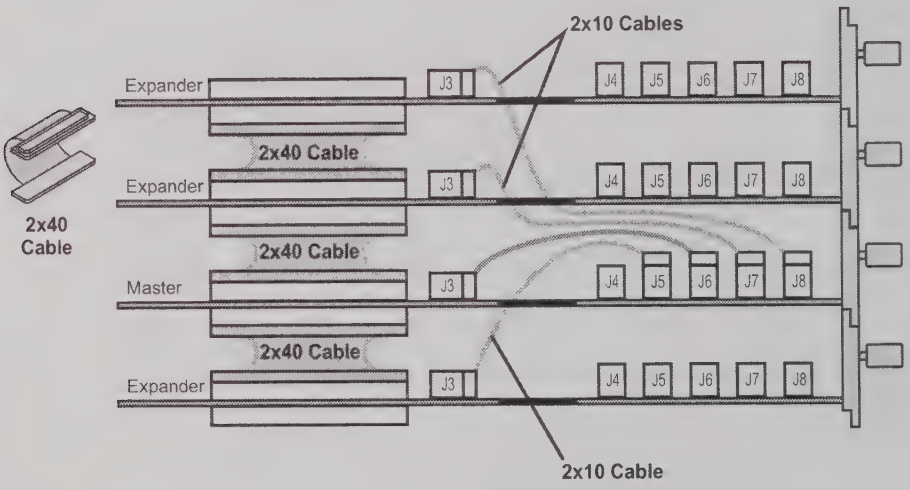
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.

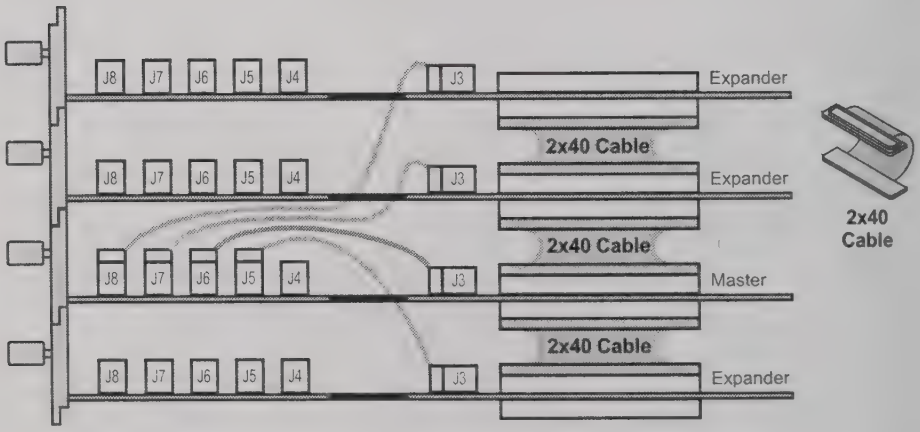




4-Card Module

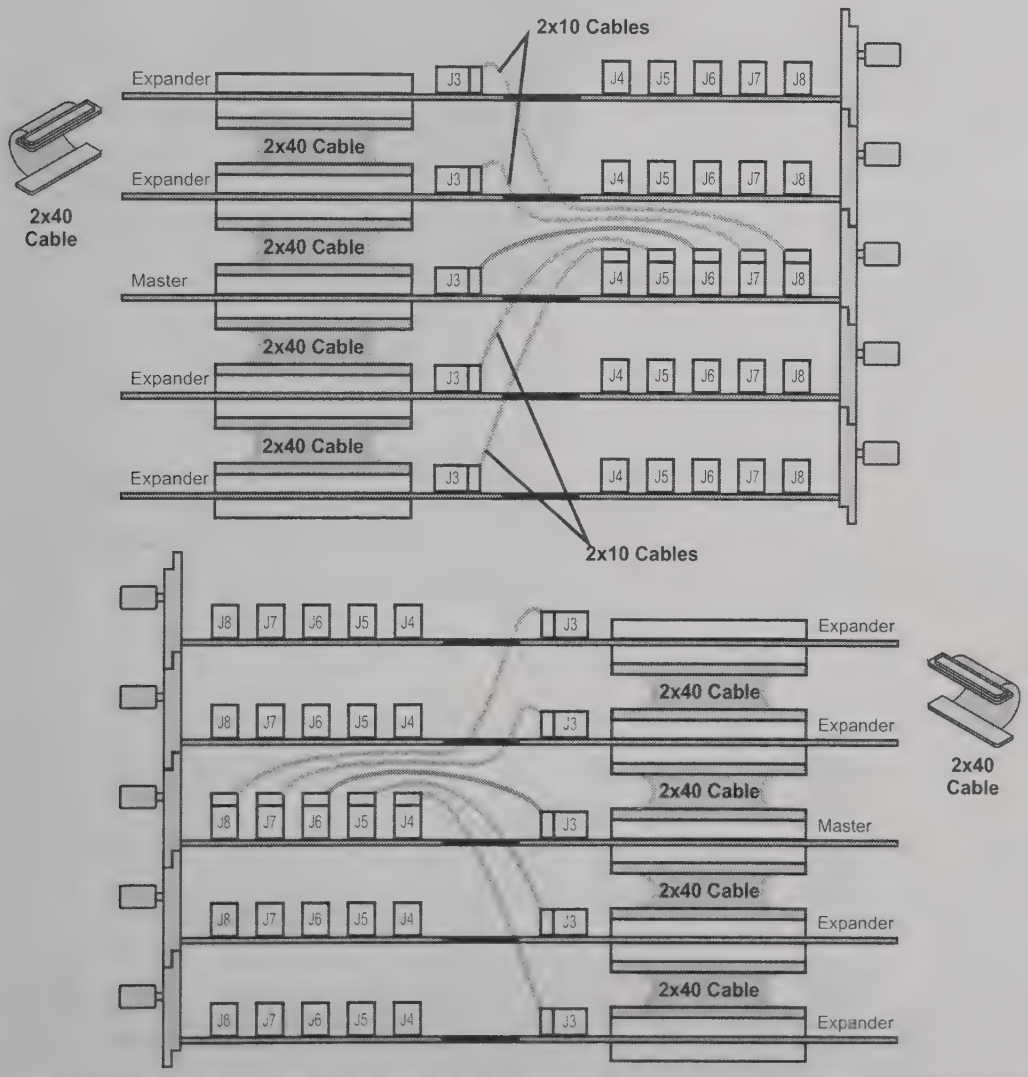
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.





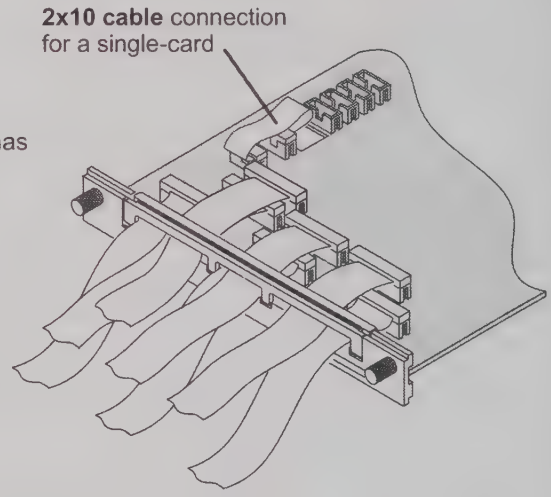
5-Card Module

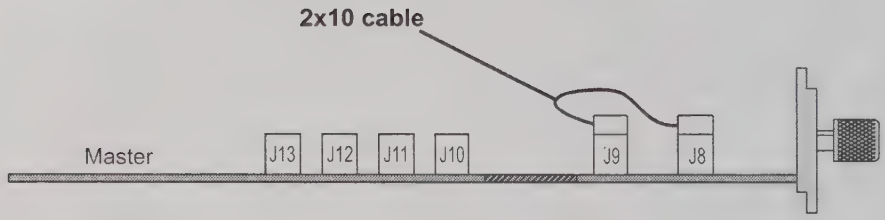
Connect the **2x10 cables** of the Expanders to the Master. Find the **2x40 cables** in the accessory pouch and connect them between the modules.

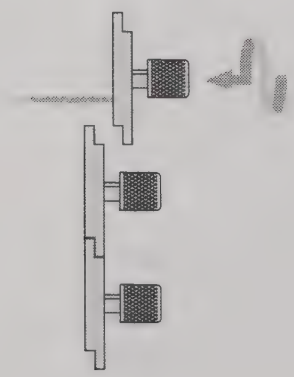


Single-Card Module

Each 16720A shipped stand alone has the **2x10 cable** connected in the single-card module configuration.







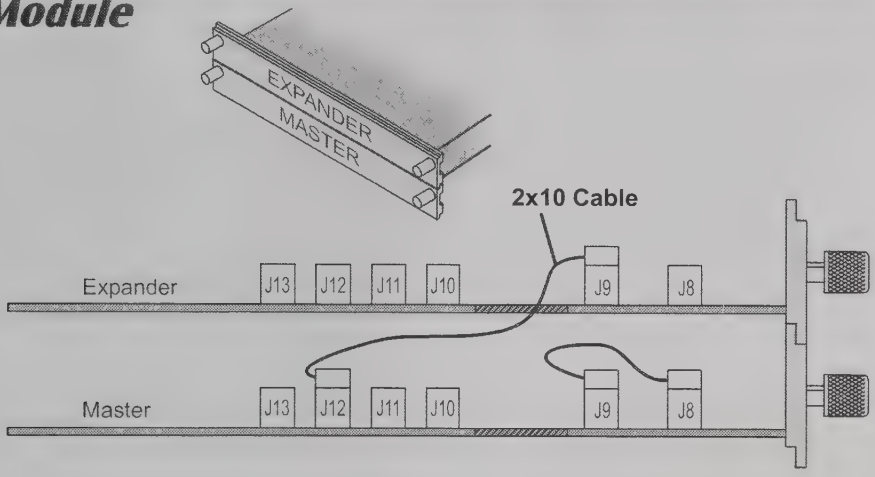
A single-card module configuration can be installed in any available slot.

CAUTION Be sure the frame is unplugged before removing or installing modules.

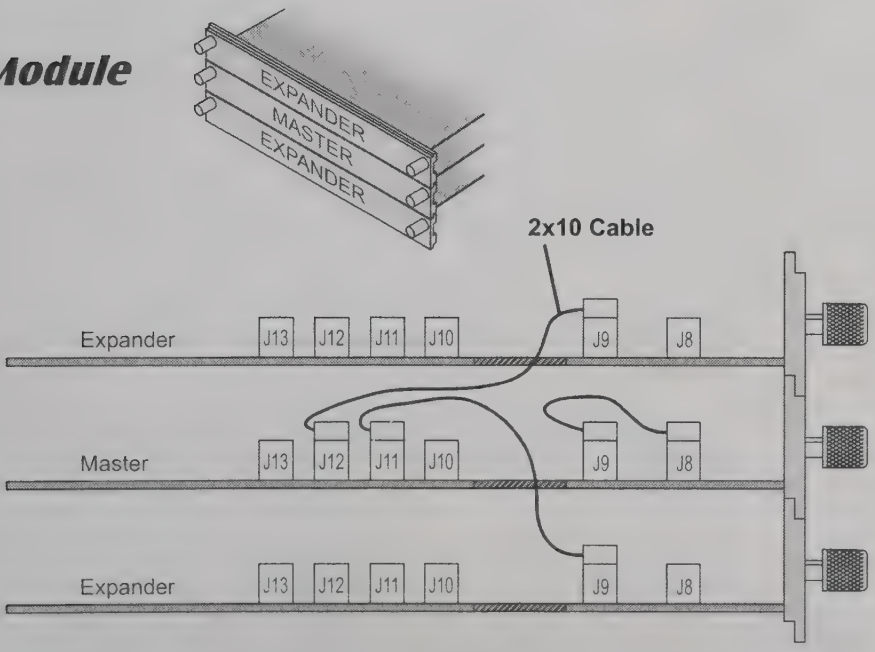
The 16720A requires software Rev. A.02.00.00 or higher.

The following pages will show you how to connect the **2x10 cables** to configure two, three, four, and five-card modules.

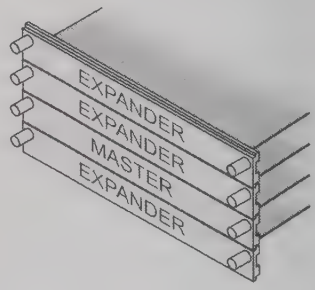
2-Card Module



3-Card Module



4-Card Module



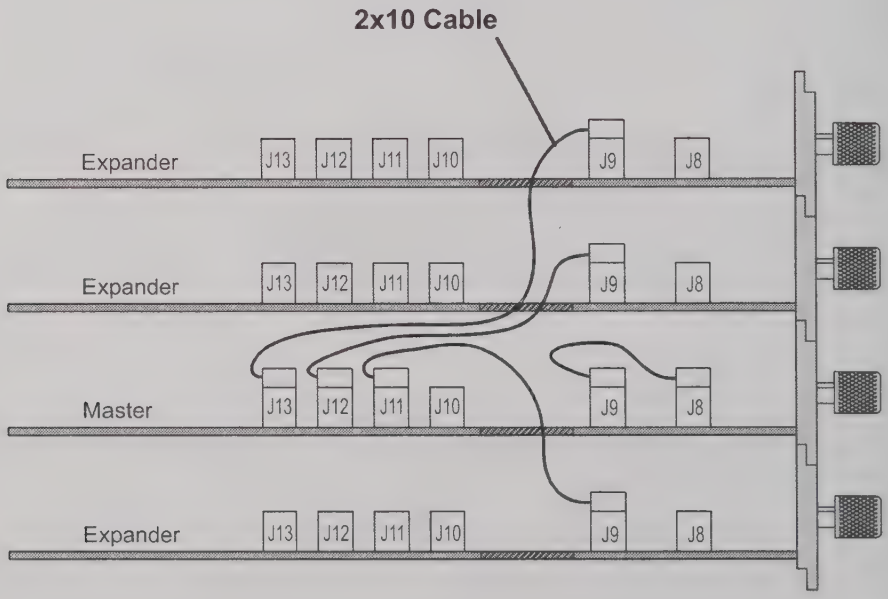
Note!

Carefully slide the four cards half way into the mainframe slots.

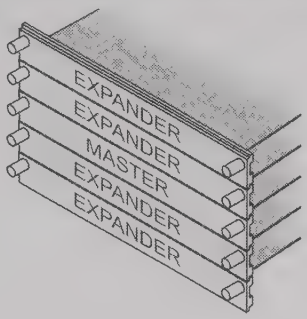
Cable the bottom Expander to the Master Card first.

Cable the upper two Expanders to the Master Card.

Gently slide the cabled assembly fully into the frame and tighten.



5-Card Module



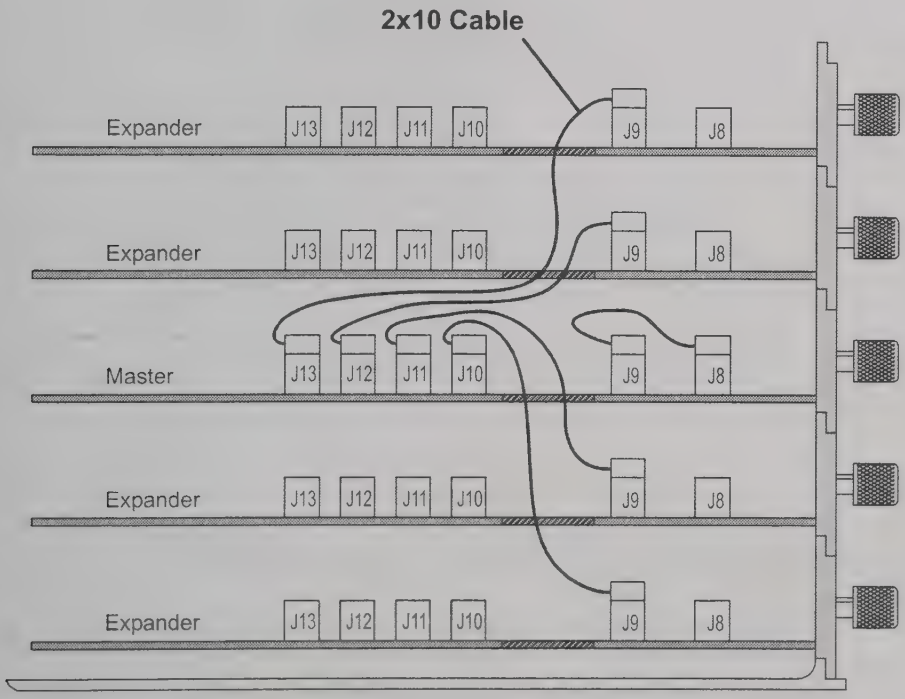
Note!

Carefully slide the five cards half way into the mainframe slots.

Cable the bottom two Expanders to the Master first.

Cable the upper two Expanders to the Master.

Gently slide the cabled assembly fully into the frame and tighten.



16720A

Done

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Agilent Technologies, Inc.

Manufacturer's Address: 1900 Garden of the Gods Road
Colorado Springs, CO 80907 USA

declares, that the product

Product Name: Logic Analyzer System Mainframe

Model Number(s): 16700B, 16701B, 16702B

Product Options(s): All options based on the above

Is in conformity with:

EMC:
IEC 61326-1:1997+A1:1998/EN 61326-1:1997+A1:1998
CISPR 11:1990 / EN 55011:1991 - Group 1, Class A*
IEC 61000-4-2:1995+A1:1998/EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD)
IEC 61000-4-3:1995/EN 61000-4-3:1995 (3V/m 80% AM)
IEC 61000-4-4:1995/EN 61000-4-4:1995 (0.5kV line-line, 1kV line-earth)
IEC 61000-4-6:1996/EN61000-4-6:1996 (3V 80% AM, power line)
Australia/New Zealand: AS/NZS 2064.1

Safety:
IEC 61010-1:1990+A1:1992+A2:1995/EN61010-1:1994+A2:1995
Canada: CSA C22.2 No. 1010-1:1992
USA: UL 3111-1:1994

Additional Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC (including 93/68/EEC) and carries the CE marking accordingly. (European Union)

*This product was tested in a typical configuration with Agilent Technologies test systems.

Date: 11/18/99

Ken Wyatt

Ken Wyatt / Product Regulations Manager

For further information, please contact your local Agilent Technologies sales office, agent, or distributor.

dcontrames

Definitions	Installation category (overvoltage category) I: Signal level, special equipment or parts of equipment. telecommunication, electronic etc., with smaller transient overvoltages than installation (overvoltage category) II. Installation category (overvoltage category) II: Local level, appliances, portable equipment etc., with smaller transient overvoltages than installation category III.
Enviromental Conditions	Indoor use only. Altitude up to 3000 m. (10,000 ft.)
Temperature	Instrument - 0 degrees C to 50 degrees C (32 degrees F to 122 degrees F) Disk Media - 10 degrees C to 40 degrees C (50 degrees F to 104 degrees F) Probes/cables - 0 degrees C to 65 degrees C (32 degrees F to 149 degrees F)
Humidity	Relative humidity 8 to 80% at 40 degrees C (104 degrees F)
Power	CAT II, Pollution degree 2 All Frames: ~Line 115/230 volts ± 20%, 48-66 Hz, 610 Watts max.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Agilent Technologies

Manufacturer's Address: Colorado Springs Division
1900 Garden of the Gods Road
Colorado Springs, CO 80907 USA

declares, that the product

Product Name: Measurement Modules

Model Number(s): 16517A, 16518A, 16522A, 16533A, 16534A, 16557D, 16710A, 16711A, 16712A, 16715A, 16716A, 16717A, 16718A, 16719A

Product Options(s): All

conforms to the following Product Specifications:

Safety:	IEC 1010-1:1990+A1 / EN 61010-1:1993	
	UL 3111	
	CSA-C22.2 No. 1010.1:1993	
EMC:	CISPR 11:1990 / EN 55011:1991	Group 1, Class A
	IEC 801-2:1991 / EN 50082-1:1992	4 kV CD, 8 kV AD
	IEC 801-3:1984 / EN 50082-1:1992	3 V/m,{1kHz 80% AM, 27-1000 MHz}
	IEC 801-4:1988 / EN 50082-1:1992	0.5 kV Sig. Lines, 1kV Power Lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE marking accordingly.

This product was tested in a typical configuration with Agilent Technologies test systems.

Colorado Springs, 10/03/96

Ken Wyatt

Ken Wyatt / Product Regulations Manager

For further information, please contact your local Agilent Technologies sales office, agent, or distributor.

dconoldmods

Definitions	Installation category (overvoltage category) I: Signal level, special equipment or parts of equipment, telecommunication, electronic etc., with smaller transient overvoltages than installation (overvoltage category) II. Installation category (overvoltage category) II: Local level, appliances, portable equipment etc., with smaller transient overvoltages than installation category III.
Enviromental Conditions	Indoor use only. Altitude up to 3000 m. (10,000 ft.)
Temperature	Instrument - 0 degrees C to 50 degrees C (32 degrees F to 122 degrees F) Disk Media - 10 degrees C to 40 degrees C (50 degrees F to 104 degrees F) Probes/cables - 0 degrees C to 65 degrees C (32 degrees F to 149 degrees F)
Humidity	Relative humidity 8 to 80% at 40 degrees C (104 degrees F)
Power	(From host frame.)

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014

Manufacturer's Name:	Agilent Technologies, Inc.
Manufacturer's Address:	1900 Garden of the Gods Road Colorado Springs, Colorado 80907 USA

declares, that the product

Product Name:	Measurement Modules
Model Number(s):	16720A, 16750A, 16751A, 16752A, and 16760A
Product Options(s):	All options based on the above

Is in conformity with:

EMC:
IEC 61326-1:1997+A1:1998/EN 61326-1:1997+A1:1998
CISPR 11:1990 / EN 55011:1991 - Group 1, Class A*
IEC 61000-4-2:1995+A1:1998/EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD)
IEC 61000-4-3:1995/EN 61000-4-3:1995 (3V/m 80% AM)
IEC 61000-4-4:1995/EN 61000-4-4:1995 (0.5kV line-line, 1kV line-earth)
IEC 61000-4-6:1996/EN61000-4-6:1996 (3V 80% AM, power line)
Australia/New Zealand: AS/NZS 2064.1

Safety:
IEC 61010-1:1990+A1:1992+A2:1995/EN61010-1:1994+A2:1995
Canada: CSA C22.2 No. 1010-1:1992
USA: UL 3111-1:1994

Additional Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC (including 93/68/EEC) and carries the CE marking accordingly. (European Union)

*This product was tested in a typical configuration with Agilent Technologies test systems.

Date: 02/08/2000

Ken Wyatt

Ken Wyatt / Product Regulations Manager

For further information, please contact your local Agilent Technologies sales office, agent, or distributor.

dcpnewmeas

Definitions	Installation category (overvoltage category) I: Signal level, special equipment or parts of equipment, telecommunication, electronic etc., with smaller transient overvoltages than installation (overvoltage category) II. Installation category (overvoltage category) II: Local level, appliances, portable equipment etc., with smaller transient overvoltages than installation category III.
Enviromental Conditions	Indoor use only. Altitude up to 3000 m. (10,000 ft.)
Temperature	Instrument - 0 degrees C to 50 degrees C (32 degrees F to 122 degrees F) Disk Media - 10 degrees C to 40 degrees C (50 degrees F to 104 degrees F) Probes/cables - 0 degrees C to 65 degrees C (32 degrees F to 149 degrees F)
Humidity	Relative humidity 8 to 80% at 40 degrees C (104 degrees F)
Power	(From host frame.)

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Safety

This apparatus has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Measuring Apparatus, and has been supplied in a safe condition. This is a Safety Class I instrument (provided with terminal for protective earthing). Before applying power, verify that the correct safety precautions are taken (see the following warnings). In addition, note the external markings on the instrument that are described under "Safety Symbols."

Warning

- Before turning on the instrument, you must connect the protective earth terminal of the instrument to the protective conductor of the (mains) power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. You must not negate the protective action by using an extension cord (power cable) without a protective conductor (grounding). Grounding one conductor of a two-conductor outlet is not sufficient protection.

- Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuseholders. To do so could cause a shock or fire hazard.

- Service instructions are for trained service personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

- If you energize this instrument by an auto transformer (for voltage reduction), make sure the common terminal is connected to the earth terminal of the power source.

- Whenever it is likely that the ground protection is impaired, you must make the instrument inoperative and secure it against any unintended operation.

- Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

- Do not install substitute parts or perform any unauthorized modification to the instrument.

- Capacitors inside the instrument may retain a charge even if the instrument is disconnected from its source of supply.

- Use caution when exposing or handling the CRT. Handling or replacing the CRT shall be done only by qualified maintenance personnel.

Safety Symbols

Instruction manual symbol: the product is marked with this symbol when it is necessary for you to refer to the instruction manual in order to protect against damage to the product.

Hazardous voltage symbol.

Earth terminal symbol: Used to indicate a circuit common connected to grounded chassis.

WARNING

The Warning sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning sign until the indicated conditions are fully understood and met.

CAUTION

The Caution sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood or met.

Agilent Technologies
P.O. Box 2197
1900 Garden of the Gods Road
Colorado Springs, CO. 80901

Product Warranty

This Agilent Technologies Inc. product has a warranty against defects in material and workmanship for a period of one year from date of shipment. Some newly manufactured Agilent Technologies Inc. products may contain remanufactured parts which are equivalent to new in performance. During the warranty period, Agilent Technologies Inc. will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Agilent Technologies Inc.

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Certification

Agilent Technologies Inc. certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies Inc. further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

About this edition

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New editions are complete revisions of the manual. Many product updates do not require manual changes; and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

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